

FLIGHT

&
THE AIRCRAFT
ENGINEER.

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 503. (No. 33, Vol. X.)

AUGUST 15, 1918.

[Weekly, Price 6d.
Post Free, 7d.]

Flight

and The Aircraft Engineer.

Editorial Office: 36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.

Telegrams: Truditur, Westcent, London. Telephone: Gerrard 1828.

Annual Subscription Rates, Post Free:

United Kingdom ... 28s. 2d. Abroad... .. 33s. 6d.

These rates are subject to any alteration found necessary under war conditions.

CONTENTS.

	PAGE
Editorial Comment:	
Our Aircraft in the Great Battle	901
The Hun and Our Aerial Mastery	902
A Canadian Flying Service	902
The Flight to Egypt	904
Adding to Pilots' Risks	904
The Pfalz Single-Seater Fighter	905
Honours	908
In the Hands of the Enemy	909
The Roll of Honour	910
The Pilot's "Office." By Lieut. W. A. Robson, R.A.F.	911
Bone and Sinew for Our Aircraft. By H. E. Thomas	912
Reviews of Books	914
Airisms from the Four Winds	916
International Aircraft Standards	919
Personals	920
The Royal Air Force	922
Aviation in Parliament	924
Aircraft Work at the Front. Official Information	925
Leisure Hours	927
Side Winds	927
Company Matters	928

EDITORIAL COMMENT.

"Newspapers are an essential part of our war organisation."
(Sir Auckland Geddes, Minister of National Service.)

SIR DOUGLAS HAIG'S great victory before Amiens may with truth be described as a triumph for the Aircraft, Tanks and Cavalry which took part in the great battle. Without attempting to discount in the slightest the dogged valour and the supreme efficiency of the infantry, it is perfectly clear that the magnificent work of the three arms we have referred to made possible the infantry advance which put the crowning finish on the attack. Of the three, it is possible to say that the aircraft had perhaps the greatest share in the triumph, if the reports of the correspondents are to be taken at their face value. Our low-flying aeroplanes were out before either the tanks or the cavalry got moving, and flying at exceedingly low altitudes

bombed and machine-gunned the enemy's defences, not only causing very heavy casualties, but spreading terror and disorganisation among the Germans and making comparatively easy the task of the tanks which followed close behind them. Apart from that, they did magnificent service to the tanks themselves, by dropping smoke bombs to screen the armoured monsters from the enemy's observation, saving many of them from being put out of action by German gunfire. In carrying out their work thus well the R.A.F. necessarily suffered very heavily. On the first day alone 51 of our machines were brought down, mostly by fire from the ground, but much as we may deplore the loss of so many gallant men and good machines, it is at least satisfactory to know that in their passing they took toll of enemy machines to the number of 65 or more. And all through the offensive, which still continues at the moment of writing the R.A.F. has continued to gloriously carry on its work, sacrificing men and material without stint in order that our infantry may have its task made easier and less expensive in human life and to assist in the consummation of that ultimate victory which its superb self-sacrifice has undoubtedly brought very much nearer.

All the records of the battle assist to make it clear that we really have secured a marked supremacy in the air at last. The indications have all been that way for some time past, but against that we have been told that the want of enterprise shown by the German air service was more apparent than real, and that the enemy command was very wisely conserving its *personnel* and material for use in the next great "drive." The experience of the Amiens offensive, however, is clearly indicative of the fact that it is not that the enemy is saving his air service for something better than casual observation and artillery spotting, but that he is relatively so weak in the air that he has been compelled to use more than ordinary caution in the use of his machines. In a word, he has passed into a position of complete inferiority and must now definitely remain so until the end of the war unless the Allies should be so foolish as to slacken their efforts. Of that we no longer have any fear. It has been demonstrated so completely that, all other factors being equal, a dominant air service must bring victory to the side possessing it that all the Allied Governments are perfectly alive to the necessity of maintaining our

supremacy and are straining every resource to keep it not only in front but to increase our lead. Which is good knowledge.

The Hun and Our Aerial Mastery.

A correspondent at the front has sent home for publication an extract from the captured diary of a German officer which is rather interesting, in that it not only concedes that the British air service is definitely on top of the Hun, but because it contains some rather caustic comments on the lack of keenness which appears to characterise the air work of the enemy's flying service. One entry says: "These fellows (British airmen) either at 11 a.m. or 5 p.m. drop about 100 bombs every day, sometimes with, very often without, results. Conscience of our might, not a single German machine shows up! Although the newspapers cannot brag and bluster enough when they publish anything about the Flying Service, our airmen themselves admit that we are inferior to the enemy in numbers and equipment. In any case, they are not as impudent as Tommy. Day and night he is overhead, dropping bombs past all counting. There have been very fine airmen on our sides, but in this respect Tommy is not second to us." Then, a later entry records that: "We had visits from airmen every day at 11 a.m. and 5 p.m. With clockwork certainty the flights arrived, dropped their eggs and disappeared. As a rule, our Archies could not touch them, as they flew at a height the shell never reached. Our airmen showed very little activity here . . . I do not know in what our superiority consists . . . Great liveliness in the air prevails above us, not from our side but from the enemy's. During our last day in rest Tommy crashed three of our contact patrols. The enemy has got faster and more flexible machines, and one can only pity our clumsy things, together with their occupants, when attacked by three or four flying men. They are under such hot fire that they have no alternative but to crash. All three crashed in flames."

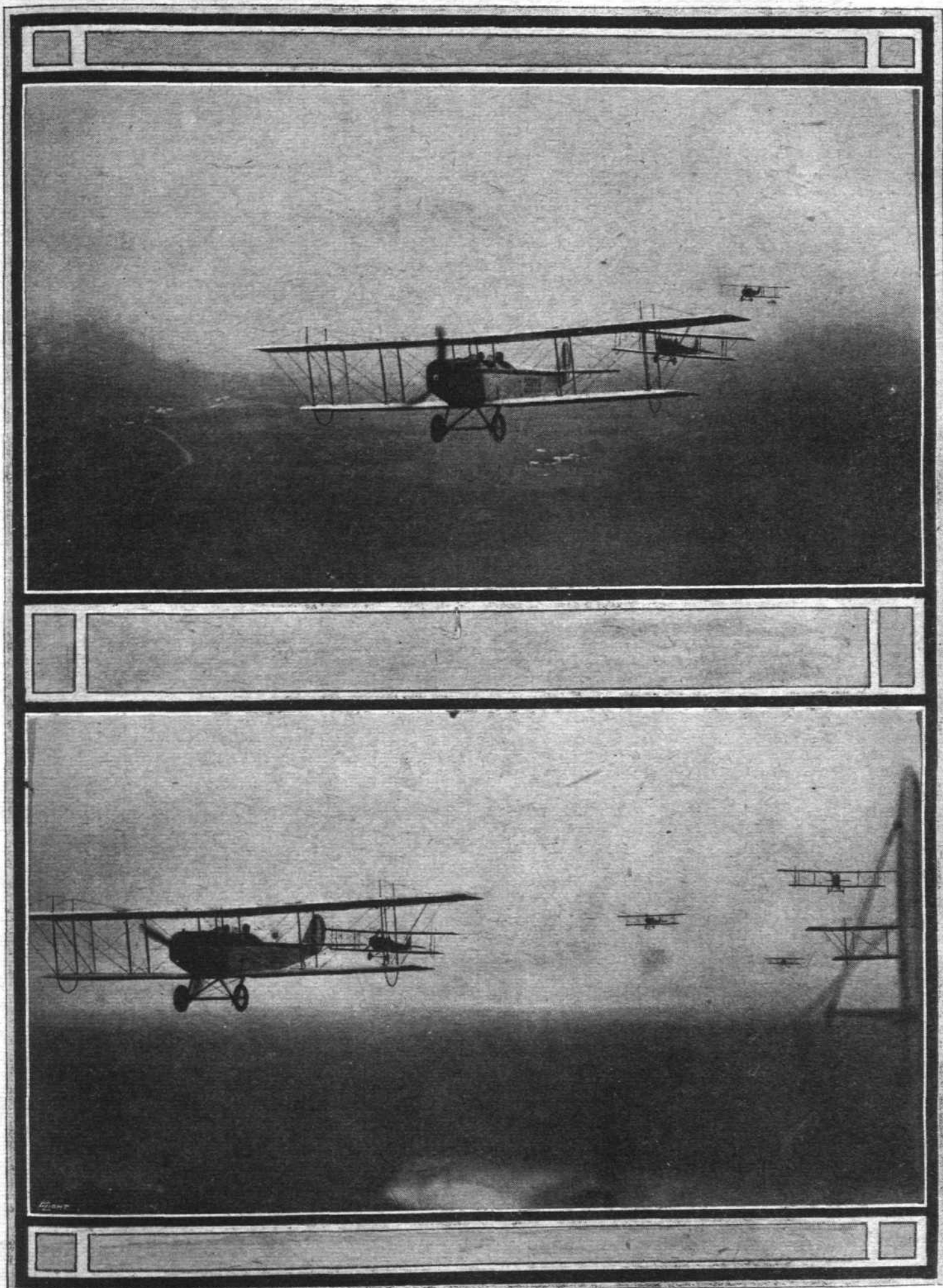
If the impressions recorded in this diary were not confirmed from other captured letters and documents it might be argued that either the observations which led up to the writer's conclusions were local only, or were perhaps exaggerated by nerve strain caused by being constantly under aerial bombardment. But the experience of this officer is not at all unusual. On the contrary, we know it is general all along the line, and that the Allied superiority in the air is in sober truth having a very salutary effect on the morale not only of the enemy's flying service but on the whole of his armies. That much is not in doubt. As we have said in an earlier paragraph, we believe at last that the Allied Governments are really doing all that is possible to maintain that superiority and to increase it. And it will progressively increase. Up to the present, we have scarcely felt the benefit of our later programme of construction. We have in truth but lately emerged from the hand-to-mouth stage. All our energies were absorbed in the creation of facilities for turning out vast numbers of machines and at the same time building up a service of sufficient strength to carry on the absolutely essential work on the battle fronts. We had very little to spare for anything else. But now the facilities of which we have spoken have not only been created but are in working order and making them-

selves felt in greater numbers of machines of a faster and better type than we have ever possessed during the four years of war. Production has largely become automatic, as it were, with the consequence that not only have we passed the point of simple superiority in numbers, but we are rapidly building up what should be, before many months are past, an overwhelming supremacy. It must not be forgotten, either, that the present position has been arrived at before the great American programme has even begun to take effect. We have all that in reserve, so that if the war should be protracted into next spring, we shall start the year with an aerial ascendancy which will hold forth fair promise of an early decisive victory.

Adding to Pilots' Risks.

A case was heard the other day in one of the London police courts, in which two men, workers in an aeroplane factory, were summoned by the Ministry of Munitions for "committing certain acts likely to endanger any person using an aeroplane." From the evidence it appeared that the two were working on aeroplane spars, and in the course of their employment drilled a hole in a spar which was a quarter of an inch out. When the error was discovered they simply said nothing about it, but plugged the hole and drilled another in the right place. A Government inspector who detected the mistake, asked one of the men if he would like to fly in a machine in which such a spar had been used, and received the reply that he would not. Obviously this man at least knew that the error which he had covered up—or attempted to hide—had resulted in seriously weakening the spar, although the defence offered was that neither knew that plugging was not allowed in aeroplane work. After hearing the case, the Bench fined each of these worthies £10, not by any means too severe a penalty for such an act, though it was probably severe enough to serve as a deterrent to other workers who may be inclined to scamp things in a similar manner.

It is not quite easy to realise the state of mind of people who, to cover up the results of their casual methods of work, or even their genuine mistakes, seem to be perfectly willing that others should run a serious risk of losing their lives as a result. Unfortunately, the records of inspection show that such cases are by no means infrequent. Sometimes, of course, they result from pure ignorance of the effect likely to come about through careless work. In a minority of cases they occur through initial carelessness on the part of workers who really know better but who had rather someone else should incur risk than that they should find themselves in trouble through it. In the latter variety of case we certainly do not think that any sort of fine is adequate. To wilfully pass defective material or parts for use in aeroplane construction is every bit as bad as taking matches into an explosives factory. In fact, it is worse, because in the latter case there is simply a danger that the matches may accidentally ignite and cause an explosion, while in the other there is the absolute certainty that the factor of safety of the resultant machine will be seriously lowered and that the lives of the pilot and his observer will be gravely jeopardised. Therefore, it seems to us that it is the worse offence.



WITH THE AMERICAN FLYING SECTION.—A couple of pictures taken in the air of formation and cross-country flying at Kelly Field, San Antonio, Texas.

A Canadian Flying Service.

In a recent issue of *The Outlook*, Colonel Grant Morden—of dope fame—has secured publicity for a very long letter on the subject of a Canadian Flying Service. He points out that every arm of the Canadian Service, except the flying men is represented in the field by Canadian units and either associated with the Canadian corps in the field or known distinctly as Canadian units. He asserts that the Canadian people are most reluctant to put up with this position of affairs any longer. The thousands of Canadian boys in the R.A.F. write home to their relatives and friends, and give facts of the great deeds done by them, and that in spite of this (*sic*) they are never given any staff appointments. He goes on to say:

"Two years ago I advocated the formation of a Canadian Flying Corps. To-day I do not believe the formation of a Canadian Flying Corps as distinct from the R.A.F. would be a proper thing to consider. In the first place, if such a corps were established, and only new recruits put into it, the Canadians in the R.A.F. would feel a strong grievance and it would cause great difficulties in that corps. You must remember that to-day we have what Lord Montagu of Beaulieu and myself fought hard to obtain in the early days of the war—namely, a unified Air Service, and the nucleus for making a great Imperial Service. Therefore I would be the last man in the world to do anything or help to do anything that would jeopardise in the slightest the achievement of a great Imperial Air Force.

"On the other hand, in my opinion it would be quite an easy matter to meet the demands and wishes of Canadians without in the slightest affecting the organisation of the R.A.F.—namely, if one or two Canadians were appointed on the Air Council, and if one of them was given the supervision of the Canadian and American end, and the other France and England, and a policy should be agreed upon with the other members of the Air Council that as quickly as possible without affecting the Air Service Canadians should be gradually brought together into squadrons of their own, to be known as 'Canadian squadron No. 1, 2,' etc., and that these squadrons should be gradually formed into wings and brigades known as 'Canadian Wing No. —' and 'Canadian Brigade No. —', that Canadians should be trained to take command of these units, and also that Canadians should be given positions in every branch of the Service, so that at the end of the war Canada would have the nucleus of a complete Canadian Flying Service, which would form part of the R.A.F. and of the future Imperial Air Service which has always been my aim."

Colonel Grant Morden further asserts that: "To-day the Canadian people are asking why our Canadians, *who form the majority of the flying men of our Air Forces*, are swallowed up in the Service here and not even their acts of gallantry credited to them, let alone the knowledge given to the public that the Canadians form the bulk of the great Air Force."

There are two points on which we join issue with the writer of this somewhat astonishing letter. The first is quite a personal matter. He seems to claim that with Lord Montagu he was very prominently associated with the movement towards a unified Air Service. We are very sorry that we appear to have missed this altogether, for although, as our readers know, we have certainly followed this matter with something like close attention, we have not seen any prominence given to the name of Colonel Grant Morden, except by the Select Committee on National Expenditure and by the *Daily Chronicle* in connection with the great dope monopoly.

The other is the assertion that Canadians form the bulk of the flying men of the R.A.F. It is a great pity that Colonel Grant Morden did not give the actual proportions of Canadian flying men to the rest. It would, of course, have helped his case if he had been able to give the actual numbers, but from that no doubt DORA will absolve him. We ourselves yield

to no one in our admiration of the whole-hearted manner in which our sister nations across the seas have rallied to the Motherland in her time of need, or of the superb gallantry with which their sons have behaved during the whole four years of war. None of them—Canadians, Australians, New Zealanders, South Africans and the men from the Crown Colonies and India—have occasion to regard their record with aught but pride. They have done well, all of them, nor has England withheld the just meed of their great deeds. Indeed, there are some who think that we have gone a little beyond the necessary and have given honour to the men from Overseas at the expense of our own, as in the case of the Gallipoli medal, for example. But that is not the question now. We are concerned with the statement that Canadians form the bulk of the flying men of the R.A.F., and we say without the least hesitation or qualification that they do not. Nor is it any more true that Overseas men in the R.A.F. are not credited with the acts of gallantry they perform. Is not Major Bishop, for one, a Canadian? It is a great pity that this discordant note was introduced into a letter with the general subject-matter of which we are very much inclined to agree. By all means let us have it argued that it would be an excellent thing to have a Canadian Flying Service—as a matter of fact, it has been settled that Canada is to have such a service—or that Canadian flying men should be formed into separate wings and squadrons. That is all perfectly in order and arguable on the merits of the proposition. But to present the case as it has been done in the letter under discussion seems to us to be in the worst of bad taste.

The Flight to Egypt.

The recent performance on a service machine of two R.A.F. pilots, accompanied by two mechanics and carrying a small cargo of spare parts and other essentials, in flying from England to Egypt and arriving dead on schedule time is a very fine one. The distance as the crow flies is roughly 2,000 miles, and the feat is only comparable to that of Commander Savory and his companions who took part in the flight to Constantinople. To our way of thinking, its principal significance lies in its bearing on the possibilities of commercial aviation after the war. Those of us who are more or less on the inside of things know that such flights are now quite within the compass of the machine of to-day, and that it is already quite possible to lay down concrete plans for the initiation of mail and passenger services to the uttermost ends of the earth. But to be successful, such services must depend upon the people for whose use they are designed, and, obviously, the first step towards such success is the establishment of faith in the ability to carry out the contract. It is only by means of long-distance flights of such a spectacular character as that to Egypt that the necessary faith can be engendered and kept alive. So far as a flight of 2,000 miles is concerned, by itself it has really little interest, so greatly has the science of aviation progressed under the impetus of war. The Channel "ferry" machines do as much in quite a short time, but it is what we would call cumulative distance, which does not appeal to the instinct for the spectacular as does the same amount of work done in a straight-away flight. That is the real value of the Egyptian flight to the cause of future aviation.

THE PFALZ SINGLE-SEATER FIGHTER.

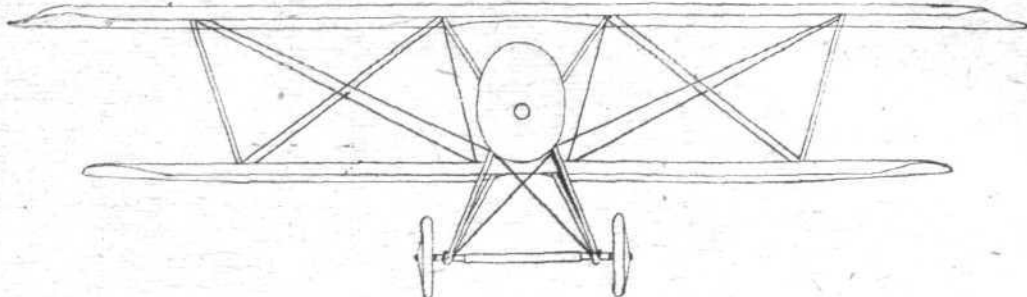
160 H.P. MERCEDES ENGINE.

(Continued from page 888.)

FUNDAMENTALLY the Pfalz single-seater belongs to the type frequently termed by the Germans a one-and-a-half-plane, that is to say, it is a machine having a larger top plane and a smaller bottom plane. The type was, as is of course well known, originated by the French Nieuport firm, and the first machine of this type, if not actually making its appear-

may therefore be placed at a smaller height above the top of the body, resulting in a better view forward. Again the smaller bottom chord does not obstruct the view downward to the same extent as does a plane of larger chord. Thus the "one-and-a-half-plane" forms a good compromise between the lighter structure of a biplane and the good visi-

Fig. 16.—Wiring Diagram of the Pfalz Single-Seater. The bracing of the centre-section struts does not run across the top of the body.



ance, was at any rate contemplated, before the outbreak of war. Since then, although comparatively recently, the enemy has copied the type fairly extensively, chiefly in the Albatros single-seaters and in the make at present under review. Aerodynamically this arrangement of the planes is of advantage on account of the fact that in a biplane the

bility of the "parasol" monoplane, which latter is probably unsurpassed as a fighter as far as obstructing the view in all directions to the smallest extent is concerned.

In the design of its wing structure the Pfalz shows several interesting features. The outward slope of the struts connecting the body with the top plane was originated, we

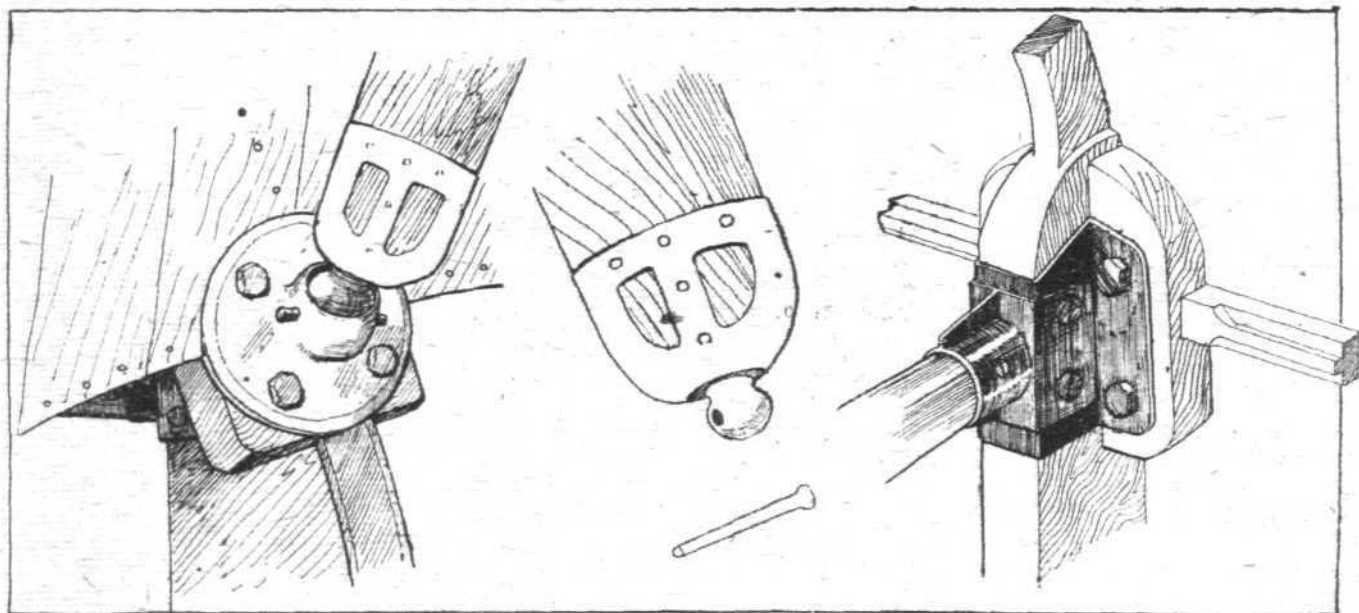


Fig. 17.—Attachment of centre section struts to body on the Pfalz.

lower plane is the less efficient, and that therefore the more of the total surface is formed by the top plane the better the overall efficiency. Practically also certain advantages attend the arrangement. The effect of the smaller lower chord is twofold. The gap between the planes need not be so great as in the case of a biplane having both planes of the same chord, and for a given fuselage depth the top plane

believe, by Sopwiths in their "one-and-a-half-strutter," while the Vee form inter-plane struts are typically Nieuport. Constructionally, however, the Pfalz is a good deal different in both these features. The Vee struts are not strictly speaking placed in the form of a letter V, as they do not quite meet in a point on the lower plane, which has two spars instead of the single spar employed in the original Nieuport. The

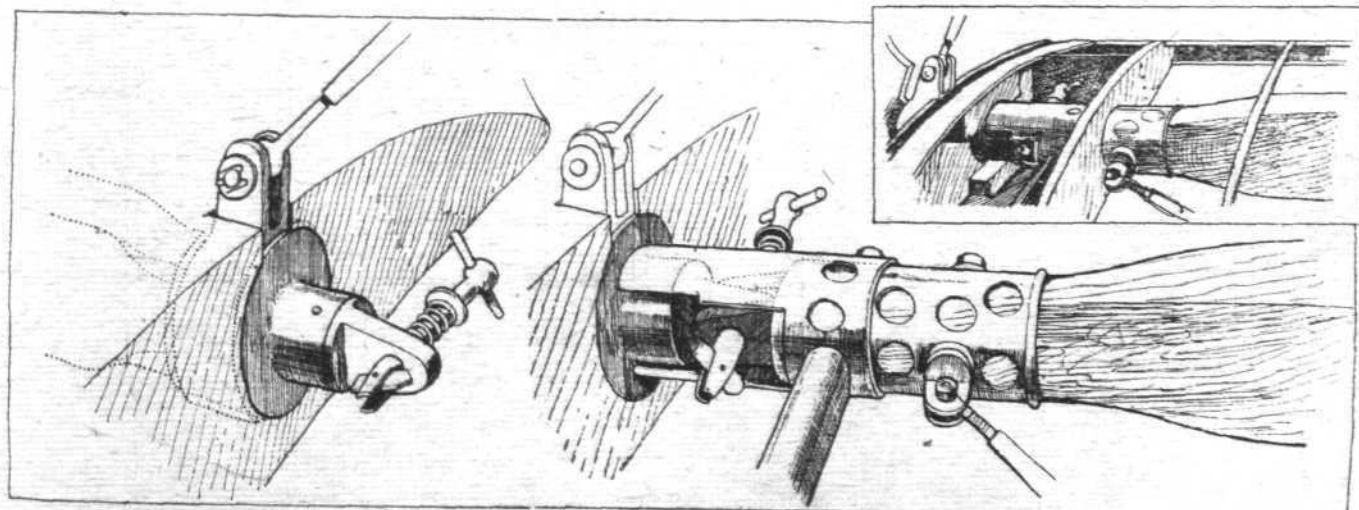


Fig. 18.—Quick-release attachment of lower wing spars to fixed wing roots of the Pfalz single-seater.

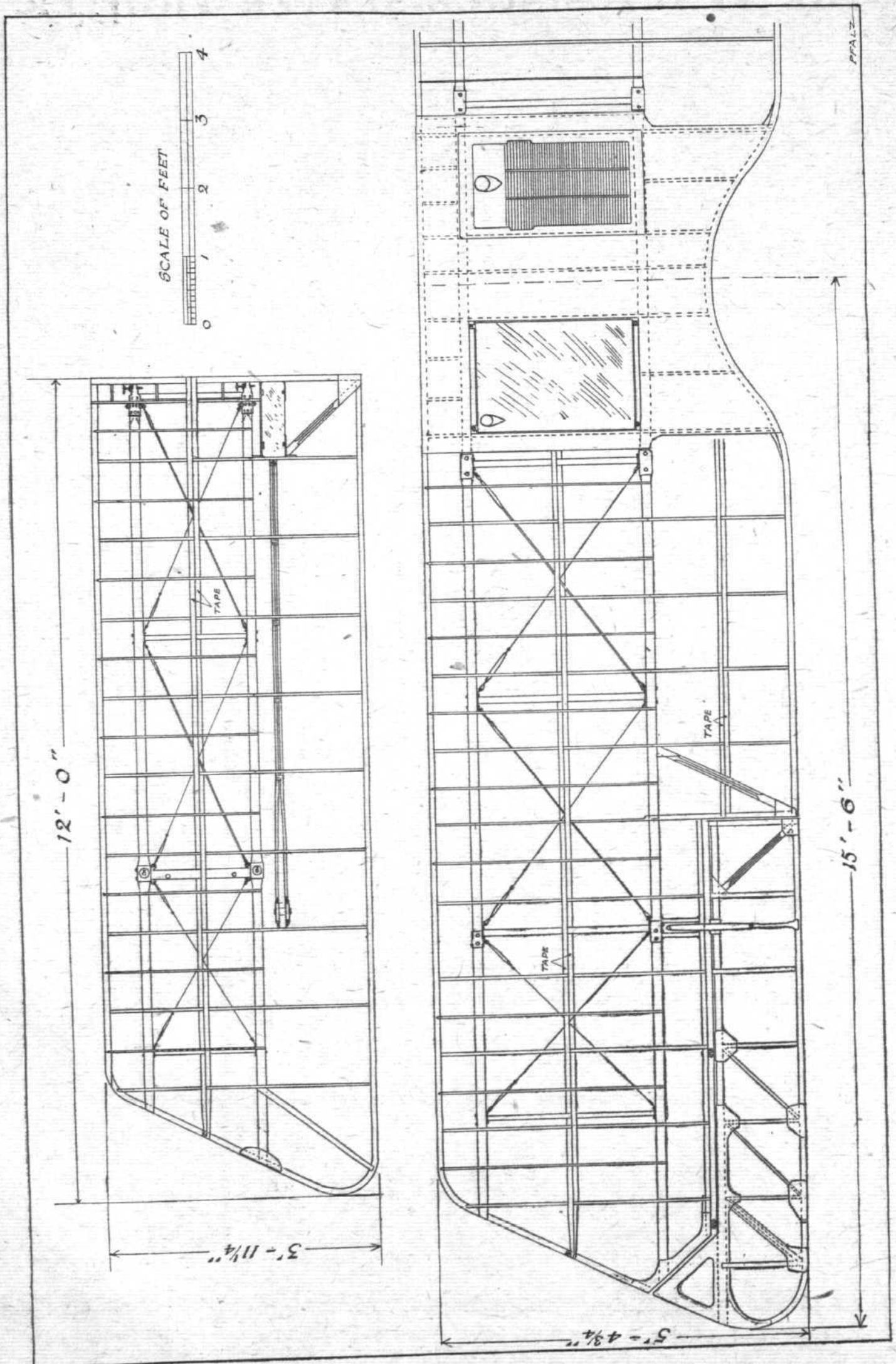


Fig. 19.—General arrangement of the wings of the Pfalz.

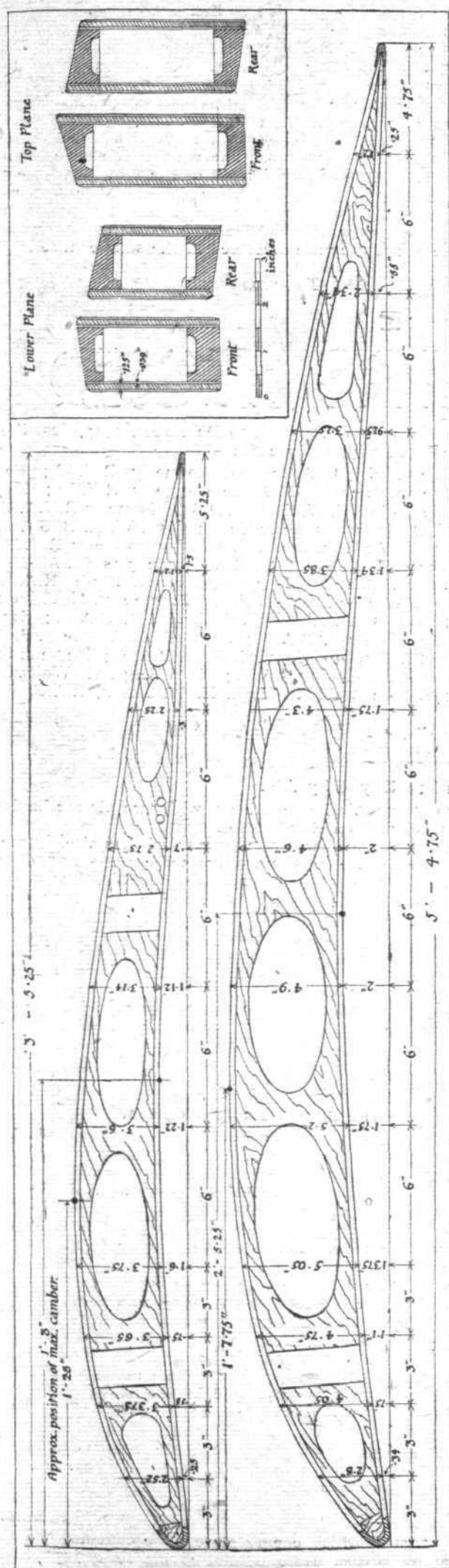


Fig. 20.—Upper and lower wing sections of the Pfalz. Inset sections of the wing spars.

object of having two spars is evidently to provide a more rigid structure better capable of resisting the twisting moment due to the travel of the centre of pressure. Owing to the fact that the inter-plane struts do not come to a point, incidence wires should be employed, but in their stead the struts are so built up as to form the bottom of a solid U which lends to the lower ends of the struts the rigidity usually provided by incidence wires. The same applies more or less to the body struts, which, as was shown in the illustrations published in our issue of July 25th, are in the form of an inverted, flattened U with its cross member adjoining the upper plane. Here, again, the construction of the struts has been designed to perform the function of incidence wires. While on the subject of these struts, attention may be drawn to a somewhat unusual arrangement of the transverse bracing cables. Generally these run from port top rail to top of starboard body struts and *vice versa*. In the Pfalz, however, this arrangement has been discarded and the arrangement indicated in Fig. 16 substituted. The cross wiring does not, it will be seen, run over the top of the body at all. Instead the cables from the upper ends of the struts on one side run to the root of the bottom plane on the same side. The body struts pivot around their attachment to the body, and any lateral displacement of the top plane would therefore result in a raising of one side or the other with a consequent tightening of the corresponding cables. From a practical point of view this arrangement of the cables would appear to possess considerable merits. The crossing of the cables *above* the body generally necessitates piercing of the top covering, which in most machines is raised considerably above the top *longerons*, to which the lower ends of the cables are usually anchored. These wires are therefore as a rule difficult to get at, and from a rigger's point of view at any rate, the Pfalz arrangement appears preferable. Then again wires crossing above the body frequently interfere with the placing of the machine guns, or with the sighting tube and other accessories. Aerodynamically, it is true, the Pfalz arrangement is at some slight disadvantage, inasmuch as the length of cables exposed to the air is greater than in the case of cables crossing above the body. When, however, as in the Pfalz, the struts are designed to do away with incidence wires the total length of cables is probably no greater, and so, on the whole, one is inclined to consider the arrangement worth while.

The general arrangement of the Pfalz wings is shown in Fig. 19. *Ailerons*, it will be seen, are fitted to the top plane only, as is almost universal practice in Germany. They are hinged to a false spar, and have their crank levers working in slots in the plane, another feature characteristic of enemy machines. This part of the wing is reinforced extensively by the use of three-ply wood. As shown in the drawing, the petrol service tank is built into the top plane, as is also the radiator, which is provided with a shutter that can, owing to the low placing of the top plane, be operated direct from the pilot's seat, a handle projecting aft from the radiator being provided for this purpose. This central portion of the top plane is also reinforced by a covering of three-ply.

The two wing sections of the Pfalz are shown in Fig. 20. The lower section is not, it will be observed, an exact geometrical reduction of the upper one, the trailing portion of its lower surface being more in the nature of a reversed curvature than is the case with the top section. The difference does not, however, appear to be great. The maximum camber of the sections appears to be smaller than one usually finds on German machines. At the same time the camber is very considerable for a machine intended for fast flying, and it is possible that the wing section is, at any rate partly, responsible for the inferior performance of the Pfalz.

The wing spars of both planes are of the box form, although not, as indicated in the sections of Fig. 20, made up in the usual way of two channel sections joined by a hardwood tongue and grooves. The flanges of the spars are of spruce, and of the section shown in the illustration. Front and rear faces of the spars are formed by plies of wood made up of two thin outer layers of three-ply with a thicker layer of spruce in between them. At points where the spars are pierced by bolts for the attachment of inter-plane struts or internal compression tubes, the space between top and bottom flanges is filled up solid by packing pieces. The attachment of the spar webs to the flanges is by glueing only, no tacks or screws being employed. The spar is afterwards covered for its entire length by fabric, to prevent moisture from attacking the internal glued joints and to reduce the risk of splitting. The fabric is not wrapped a round the spar spirally but is laid *up* straight, finishing off along one corner of the spar. As in most machines, the spars are not

placed with their vertical faces at right angles to the chord line but at right angles to the line of flight.

Reference has already been made to the struts connecting the body with the top plane, and to the fact that these struts are pivoted at their attachment to the body. The exact form which this pivot takes is shown in Fig. 17. A circular base plate is bolted to the body formers where these are crossed by the upper body rails. The base plate has welded to it a cup or socket into which fits a spherical male portion secured to a sheet steel shoe surrounding the lower end of the body struts. A pin (taper) passing through socket and ball secure the strut in place. The slot through the ball is of elliptical section to allow a certain amount of play for alignment.

Fig. 18 shows how the lower spars are attached to the wing roots formed integrally with the body. The fixed spar inside the body is split to receive the former occurring at

this point, and is rounded off at its outer end to a circular section. A steel cap surrounds the end of the spar root, to which it is secured, as far as we have been able to ascertain, by a single pin. This cap is surrounded by a collar incorporating a fork for the attachment of the lift cable, and terminates at its outer end in a steel piece shaped like an eyebolt. The inner end of the wing spar is also surrounded by a sleeve, this, however, being secured by two bolts, the inner of which is an eyebolt that serves as an anchorage for the internal drift wiring. The wing spar sleeve carries at its inner end the female portion of the joint, a fork end, which engages with the eyebolt of the fixed spar, the two being held together by a quick-release pin as shown. In Fig. 18 the ribs have been omitted in the larger drawing for the sake of clearness, but they are indicated in the smaller inset.

(To be continued.)



HONOURS



Italian Honour for Major-General Kerr.

It was announced in a supplement to the *London Gazette* on August 7th that the King of Italy had conferred the following decoration for distinguished services rendered during the war:—

MILITARY ORDER OF SAVOY.

Officer.

Vice-Admiral M. E. F. Kerr, C.B., M.V.O. (Major-General, R.A.F.).

"Mentioned in Despatches."

It was announced in a supplement to the *London Gazette* on Aug. 6th that the names of the following have been brought to the notice of the Secretary of State for War by Lieut.-Gen. Sir J. L. van Deventer, K.C.B., Commanding-in-Chief, British Forces, East Africa, for distinguished services during

the operations from May 30th to December, 1917, described in his despatch of January 21st:—

Sec. Lieut. N. B. Arbuthnot (formerly R.F.C.); Sec. Lieut. (Temp. Lieut.) G. Baillie (formerly R.F.C.); Maj. (Temp. Lieut.-Col.) F. W. Bowhill, D.S.O. (formerly R.N.A.S.); Lieut. W. P. Brown (formerly Yeo.); Capt. W. R. B. Gifford (formerly Midd'x R.); Lieut. F. V. Way (formerly R.F.C.); Z252 Sergt. H. Atkins, S.A., R.A.F.; Z213 1st Cl. Air-Mech. C. A. Austen, R.A.F.; Z132 Corpl. H. A. Blyth, R.A.F.; Z126 Corpl. A. Booser, S.A., R.F.A.; Z177 Sergt. H. Chivers, R.A.F.; Z78 1st Cl. Air-Mech. J. S. Elliott, R.A.F.; Z138 Corpl. L. S. MacLean, R.A.F.; Z273 1st Cl. Air-Mech. S. C. Pearsall, R.A.F.; Z306 Corpl. C. Skitt, R.A.F.; Z528 2nd Cl. Air-Mech. S. Stockman, R.A.F.; Z189 Sergt. E. Whitmill, R.A.F.; Z330 2nd Cl. Air-Mech. H. Wilkinson, R.A.F.



The V.C. Ribbon.

THE King has approved of the colour of the ribbon of the Victoria Cross being in future the same for all Services, the red ribbon of the Army Victoria Cross being universal for the Navy (instead of the blue ribbon hitherto used), Army, and R.A.F.

Admiralty and Aeronautical Supplies.

In the report of the Committee of Public Accounts there is the following reference to the Ministry of Munitions:—

"From March 1st, 1917, the Ministry became responsible for the supply of aeroplanes, engines, etc., although during that month the accounting machinery and payment remained in the hands of the Admiralty and War Office. The contracts transferred to the Ministry by the Admiralty and War Office showed considerable divergencies in method between the two departments, particularly in regard to firms new to the work, but the Ministry have now cleared the position a good deal.

"Your Committee are informed that the Ministry, while they are placing contracts on the fixed price system also employ that of cost, plus percentage. In this case they claim that a careful watch is kept over the amounts incurred and that the basis of the contract is altered to the fixed price system as soon as possible.

"The Admiralty in 1915 entered into contracts with an American Company for aeronautical supplies involving heavy payments, but a large amount of the expenditure was only brought to account by the Ministry in November, 1917. Treasury authority had been obtained for part of the commitments, but the Admiralty did not ask for sanction before incurring important liabilities beyond the original programme.

"The history of the contracts in question is understood to be still under inquiry, but the Committee are of opinion that the Comptroller and Auditor-General is right in thinking that the approval of the Treasury should have been obtained before the settlement was finally made with the contractors involving the large sums of—

"(a) £1,006,433 14s. 2d. in respect of supplies up to July 31st, 1916.

"(b) £1,088,877 4s. 7d. for the value of work done and loss of profit on orders afterwards cancelled.

"(c) £88,750 4s. 6d. in respect of suspension of work pending settlement."

England to Egypt by Air.

Two Royal Air Force officers, with two air mechanics, have just flown from England to Egypt.

The aeroplane used was of a type which has already seen considerable service at the front; spare parts and other requirements were carried; and this long flight, with one or two halts for petrol, &c., at suitable stopping-places, was in every respect a piece of routine work, and not a matter of special designing or organising.

The pace made was good throughout, and the machines arrived safe and on time in Egypt. The distance as the crow flies is over 2,000 miles.

A message from Cairo says that the machine arrived at that place on August 7th, when the officers were received by Major-General Salmond. It is stated that the machine, which was guided on the last stage by two local planes, had flown 2,900 miles.

The Work of the R.A.F. Photographers.

MUCH of the success of the British offensive begun on the morning of August 8th is undoubtedly due to the accurate information of the enemy dispositions supplied by the many excellent photographs secured by our airmen. Nearly four times as many photographs have been taken during the past week as during the preceding seven days, it is authoritatively stated, notwithstanding the greatly increased resistance of the enemy.

Although little is heard of the R.A.F. Photographic Section in the official *communiqués*, the achievements of this branch constitute one of the minor wonders of the war. For the excellence of its apparatus and equipment, for the skill of its trained personnel, and for the amazing celerity of its operations it is universally regarded as a model of its kind. It is no uncommon performance in the Royal Air Force for a dozen or more finished enlargements of a new enemy position to be in the hands of the Intelligence Staff within 45 minutes of the plate being exposed in the air.

That the Germans themselves are conscious of British superiority in this respect is shown by a recently captured German order, in which special attention is drawn to the various ways in which enemy secrets are continually being disclosed by British cameras, and giving strict injunctions to guard against this.

IN THE HANDS OF THE ENEMY.

THE following is an official list, published in Germany, of British machines which the Germans claim fell into their hands on the Western Front during the month of April, 1918:—

20 Sopwiths.

Single-Seaters.

- No. B 5750, Lieut. Mekilvey, prisoner.
- No. B 2377, name of occupant could not be ascertained.
- Motor No. 21586, name of occupant unknown, dead.
- No. could not be ascertained, Lieut. J. J. Meredith, fate unknown.
- No. of machine and name of occupant could not be ascertained, dead.
- Motor Clerget Blin No. 7725, name and fate of occupant unknown.
- No. of machine and name of occupant could not be ascertained, machine completely smashed, occupant apparently alive.
- No. B 698, Lieut. A. F. Isbell, wounded.
- No. C 3791, Lieut. Browne, prisoner.
- No. unknown, Lieut. F. R. Knapp, prisoner.

Two-Seaters.

- No. B 641, Lieut. William Mudir, Pilot Ronald Grey, prisoners.
- No. C 8294, R 2644, E.C. 2, names of occupants unknown, prisoners.

In the case of 8 Sopwiths, the numbers of the machines and the names of the occupants could not be ascertained.

23 Sopwith Camels.

- No. unknown, Lieut. D. H. Gold, dead?
 - No. unknown, Lieut. M. J. Peiter, fate unknown.
 - No. unknown, Lieut. Hill, fate unknown.
 - No. R 17639, name of occupant unknown, wounded.
 - Motor, Admiralty, Lieut. D. Ch. Hopewell, prisoner.
 - Motor, Clerget, Lieut. H. Lowe, Australian, prisoner.
 - Motor, Rolls-Royce, Lieut. Pemperton, wounded.
 - No. D 6428, Lieut. Dean, Canadian, wounded.
 - No. D 1837, name of occupant unknown, wounded.
 - No. unknown, Capt. Agath, dead.
 - No. B 6311, Lieut. Stovin, dead.
 - Motor, Clerget, name of occupant unknown, dead.
 - No. B 5048, name of occupant unknown, dead.
- In the case of 10 Sopwith Camels the numbers of the machines and the names of the occupants could not be ascertained.

4 Bristols.

Single-Seaters.

- No. unknown, Edg. Whitfield, dead.
- No. 3507, name of occupant unknown, wounded.
- Fixed motor No. 1319, name of occupant unknown, wounded.
- Two-seater, No. B 1156, names unknown, wounded.

6 Bristol Fighters.

Two-Seaters.

- No. of machine unknown, names of occupants could not be ascertained, dead.
 - No. unknown, Lieut. Williams, Lieut. Critschley, dead.
 - No. unknown, Lieut. B. A. Bell, Lieut. G. G. Bartlett, fate unknown.
 - No. unknown, names unknown, dead.
- In the case of 2 Bristol Fighters, the numbers of the machines and the names of the occupants could not be ascertained.

15 S.E.5 Single-Seaters.

- No. could not be ascertained, Lieut. Baumont, unwounded.
 - No. of machine and name of occupant could not be ascertained, dead.
 - No. not ascertained, Lieut. E. L. Sneithers, landed safely.
 - No. not ascertained, Adams Ronald, prisoner?
 - No. could not be ascertained, Hugh Dugan, fate unknown.
 - Motor, Hispano-Suiza, Capt. W. B. Patrick, prisoner.
 - No. of machine and name of occupant not ascertained, dead.
 - No. unknown, name of occupant unknown, prisoner.
- In the case of 7 S.E.5's the numbers of the machines and the names of the occupants could not be ascertained.

7 R.E. two-seaters.

- Motor No. 4922, Lieut. George Grinstead, Newbury, prisoners.
 - No. C 4578, names of occupants unknown, prisoners.
 - No. could not be ascertained, occupants dead.
- In the case of 2 R.E.'s the numbers of the machines could not be ascertained, the occupants were dead. In the case of 2 R.E.'s the numbers of the machines, and the names and fate of the occupants could not be ascertained.

14 Spads.

Single-Seaters.

- No. S 1217, Lieut. Hopgood, prisoner.
 - No. could not be ascertained, Lieut. G. G. MacPhee, prisoner.
- In the case of 2 Spads the numbers of the machines could not be ascertained; the occupants were dead. In the case of 2 Spads the numbers could not be ascertained; the occupants prisoners (one was an American N.C.O.). In the case of 7 Spads the numbers of the machines and the names and fate of the occupants could not be ascertained.

4 de H. two-seaters.

- No. 2161, names of occupants not ascertained, pilot dead, observer wounded.
- D.H. 5, No. 1848, names of occupants could not be ascertained, dead.
- D.H. 4, No. of machine and names of occupants could not be ascertained.
- D.H. 9, No. of machine and names of occupants could not be ascertained.

2 Martinsyde two-seaters.

- Motor, Rolls-Royce, Alex Pontoul, fate unknown, other occupant dead, name not known.
- No. 325, occupants dead, names could not be ascertained.

1 Vickers single-seater.

- Motor, Hisp.-Suiza, name of occupant could not be ascertained, dead.
- In addition, six machines whose type could not be ascertained remained in our possession.

MACEDONIAN FRONT.

1 Nieuport single-seater.

- No. 4047, Lieut. Montoya, dead.

In PALESTINE we captured:—

- 1 R.E. two-seater, No. of machine and names of occupants not ascertained, pilot wounded, observer dead.
- 1 machine, No. 3594, name of occupant not ascertained, dead.
- 1 single-seater, name of occupant not ascertained, wounded.

The "Raid" on Vienna.

VIENNA seems to have been greatly stirred by the shower of pamphlets distributed over it by Major d'Annunzio's squadron as described in the official *communiqué*.

The military *Reichspost* says that they were undeterred by such terrors, but succeeded in reaching Vienna in broad daylight, is a fact which, though accomplished by the enemy, it would be unchivalrous to belittle. This attack places Vienna on the long list of cities visited by the far-reaching weapons of war. It will not only be a memorable experience in Vienna's history of the war, but it will also be an earnest reminder that residents in the Austrian capital have no claim to occupy a privileged position in these terrible times. The authorities have taken rigorous measures to circumvent the effects of the propaganda literature which was dropped from the aeroplanes, and have issued peremptory orders to the public to hand over every copy found, threatening persons attempting to circulate such papers with the severest penalties.

The *Fremdenblatt* states that there was a wild chase in

the streets after the tricoloured sheets, which were speedily sold for twenty crowns apiece, and even more.

The following is a translation of the proclamation:—

"People of Vienna, learn to know the Italians. We are flying over Vienna. We could drop tons of bombs, but we only drop a greeting to the three colours of liberty. We Italians do not make war on women, children, and old men. We are making war on your Government, the enemy of national liberties, on your blind, obstinate, and cruel Government, which cannot give you either peace or bread, and feeds you on hatred and illusions.

"People of Vienna, you have the reputation of being intelligent, but why have you put on Prussian uniform? You see that now the whole world has turned against you. Will you continue the war? To continue it is suicide for you. What do you hope for? For the decisive victory promised to you by the Prussians? Their decisive victory is like the bread from the Ukraine. One dies while waiting for it.

"People of Vienna, think for yourselves. Awake. Long live liberty, long live Italy, long live the Entente."

THE ROLL OF HONOUR

(Where an Officer is seconded from the Army, his unit is shown in brackets.)

Published August 8th.

Killed.

Berry, Sec. Lieut. C. F. Forbes, Lieut. N. J.
Binnie, Lieut. W. H. (R. Gunther, Sec. Lieut. H. H.
Scots (T.F.). Marriott, Sec. Lieut. G.
Collingwood, Lieut. R. M. Wright, Sec. Lieut. T.

Died of Wounds.

Bird, Lieut. M. H. (Cent. Ont. Howard, Lieut. M. L. (W.
R.). Ont. R.).

Wounded.

Apps, Lieut. G. F. M. Riddell, Sec. Lieut. J. (R. Sco.
Baskerville, Capt. M. G. Fus.).
Gann, Sec. Lieut. W. H. Swatridge, Sec. Lieut. C. J.
Patman, Sec. Lieut. G. H. Taylor, Lieut. W. C.

Missing.

Garnett, Lieut. J. N. (R.F.A.). Penwarden, Sec. Lieut. H. G.
Meredith, Lieut. R. E. (Brit. C. R.). Tratman, Lieut. L. W.

Previously incorrectly reported Prisoner, now reported Missing.

Eaton, Lieut. E. C. (Sask. R.).

Previously Missing, now reported Prisoner in in German hands.

Blight, Lieut. T. F. (Manit. R.).

Correction: Formerly a Prisoner of War in Germany, now reported Arrived in England.

Wilson, Lieut. C. B., M.C. (Hussars, attd. R.F.C.), should read
Wilson, Lieut. T. C. (R.F.C.).

Published August 9th.

Killed.

Cuffe, Lieut. R. T. Pollock, Sec. Lieut. J. F.
Dodds, Sec. Lieut. S. J. A. Smith, Lieut. F. C.
Lott, Lieut. C. W. Talbot, Sec. Lieut. W. C.
Perris, Sec. Lt. N. F. (Lond.). (Leins, R.).

Previously Missing, now reported Killed.

Scott, Lieut. V. W. (E. Surr. attd. R.F.C.).

Wounded.

Bryer-Ash, Lieut. G. Pennefather, Maj. W.
Duncan, Sec. Lieut. C. W. Slade, Lieut. G. O.
Fife, Sec. Lieut. J. W. Smith, Lieut. J. D.
Keep, Lieut. A. S., M.C. Thomson, Sec. Lieut. S. A.
Ludgate, Sec. Lieut. T. K. Woodhouse, Capt. J. W.

Missing.

Butler, Lieut. R. A. (R.E.). Thornley, Sec. Lieut. S. C.
Jones, Lieut. A. R. (E. Lan. E.).
Thompson, Lieut. F. G. Young, Lieut. C.

Published August 10th.

Killed.

Beachcroft, Lieut. W. F. Hunt, Sec. Lieut. G. E.
(R.F.A., S.R.). (K.O.Y.L.I.).
Binckes, Lieut. R. Steel, Lieut. L. G.
English, Sec. Lieut. J. P. F. Wilson, Sec. Lieut. D. (S.
Froneman, Capt. E. E. Lanc. R.).

Previously Missing, now reported Killed.

Sotham, Lieut. R. C. (R. W. Kent, attd. R.F.C.).

Wounded.

Blythe, Lieut. E. Mottershaw, Sec. Lieut. H.
Breeze, Sec. Lieut. N. G. Newman, Sec. Lieut. W. H.
Fowler, Lieut. F. Rickards, Sec. Lieut. R. H.
Griffith, Lieut. J. S. Thomson, Sec. Lieut. A. N.
Harper, Sec. Lieut. G. B. Tredcroft, Lieut. E. H.
Low, Sec. Lieut. G. E. D. Turner, Lieut. R.
Middleton, Sec. Lieut. W. Whittaker, Lieut. H. A.

Missing.

Anderson, Sec. Lieut. W. A. Aitken, Sec. Lieut. J.
Auster, Sec. Lieut. N. C. K. Barbitt, Sec. Lieut. T. B.
(S. Wales B.). Crickmore, Lieut. E. B.

Phipson, Lieut. H. G. S. Waterlow, Capt. E.
Scudamore, Lieut. W. S. K. White, Lieut. R. E.

Published August 12th.

Killed.

Belley, Sec. Lieut. F. J. Hart, Sec. Lieut. F. W.
Brown, Lieut. M. C. Lowcock, Maj. R. J.
Delay, Sec. Lieut. A. R. McLeod, Capt. M. McKay.
Fox, Lieut. B. C.

Died.

Arden, Lieut.-Col. J. H. M. D.S.O.

Wounded.

Beattie, Lieut. C. A. B. Taber, Lieut. D. F.
Loraine, Maj. R. Wilson, Lieut. J. C.
Rattray, Sec. Lieut. A. B.

Missing.

Angus, Sec. Lieut. K. R. Irvine, Lieut. V. R.
Bayliss, Lieut. W. M. F. James, Capt. R. A. (Midd'x.
(9th Lancers). R., T.F.).
Carson, Sec. Lieut. S. E. Kemp, Lieut. F.
Conlan, Sec. Lieut. T. Kirkland, Lieut. J. T.
Dickie, Lieut. C. B. (Black Scadding, Sec. Lieut. E.
Watch). Trapp, Lieut. D. J.
Dubber, Capt. R. E. Van Tilburg, Sec. Lieut. J. A.
George, Sec. Lieut. S. S. Vosper, Lieut. R. A.
Griffiths, Sec. Lieut. D. B. Yates, Sec. Lieut. R. A.
Hawkins, Sec. Lieut. T.

Interned.

Comerford, Sec. Lieut. J. J. Purvis, Lieut. W. F.
Copley, Lieut. A. Reid, Lieut. J. F.
Coward, Lieut. G. R. Simpson, Lieut. D. T.
Gray, Capt. J. A. Simpson, Lieut. J. W.
Pattison, Lieut. J. R. Vance, Lieut. J. D.
Potter, Lieut. S. B.

Published August 13th.

Killed.

Cash, Sec. Lieut. F. E. Rossington-Barnett, Lieut.
Fowler, Lieut. C. J. J. A.
Miles, Sec. Lieut. W. N. Slade, Lieut. R. B.

Died of Wounds.

Ball, Lieut. H. J. Stringfellow, Sec. Lieut. J. H.

Drowned.

Carr, Sec. Lieut. A. W. (Conn. Rang.).

Wounded.

Berry, Capt. D. M. (Royal F.). Robertson, Sec. Lieut. J.
Bridgwood, Capt. P. G. K. Wearne, Sec. Lieut. H.
McNamara, Sec. Lieut. J. J.

Previously Missing, now reported believed Wounded and Prisoner.

Mercer-Smith, Sec. Lieut. V.

Missing.

Mollett, Lieut. F. N. (Hamps.). Shaw, Lieut. F. A., M.C.
Morton, Capt. E. B. G. (Lancs. Fus. T.).
Rawlings, Sec. Lieut. B. Smith, Lieut. A. (Lincs. R.).
Rose, Lieut. G. Spence, Lieut. J. H. (R.A.).

Missing, believed Prisoner.

Marshall, Sec. Lieut. N. H.

Prisoners.

Cole, Lieut. K. R. Parsons, Lieut. C. S.

Previously Missing, now reported Prisoners.

Claye, Capt. H. (Sher. For.). Glasspoole, Sec. Lieut. G. H.
Cook, Sec. Lieut. C. W. Sugden, Sec. Lieut. J. E. W.
(R.F.C.). Tannenbaum, Lieut. H.

Previously reported believed Prisoner, now reported Prisoner.

Clarke, Sec. Lieut. H. A.

Previously reported believed Wounded and Prisoner, now reported Prisoner.

Milani, Sec. Lieut. R. S.

Previously Missing, now reported believed Prisoner.

McLeod, Lieut. G. D.

THE PILOT'S "OFFICE."

INSTRUMENTS FOR AIR USE.

By Lieutenant WILLIAM A. ROBSON, R.A.F., Author of "Aircraft in War and Peace."

[The following short summary of the chief instruments, &c., by Lieut. W. A. Robson, R.A.F., will afford the information to a number of prospective pilot enquirers who have now and again asked for enlightenment in this direction.—ED.]

LET us take a look into an airman's office. I do not refer to the wooden hut on the ground where in bad weather cigarettes are smoked, the illustrated weekly papers read, and aerial operations discussed in professional slang.

I mean the "office" where the pilot does his real work; and this is the name which for some inexplicable reason has been given to the cockpit of an aeroplane, wherein sits the aviator. To the uninitiated it appears a confused medley of dials, recording needles and levers; mysterious, unfathomable, exciting. But to the trained airman these things are as an open book; and each one of them is in some way essential to the control of the machine and its manœuvres.

The most important of the instruments is the compass. Without its aid an airman who is flying over the sea or over land on a misty day is hopelessly lost. In the R.A.F. great attention is attached to the necessity for every pilot being able to fly a compass course; that is to say, a course along which he is guided solely by his compass; and very great progress has been made in this connection. Thousands of miles are flown every week on patrols over the sea alone, and pilots nowadays very rarely come to grief through losing their way.

This is saying a good deal, when the problem presented by drift is remembered. If an aircraft starts from one point to fly to another due East, and there is a wind blowing at 15 miles an hour North-East, that will clearly have to be taken into consideration, and the compass course altered (before ascending) according to the total distance of the journey.

Many difficulties had to be overcome in the production of a satisfactory compass for aerial work. Chief among these was that of neutralising the magnetism of the engine (and in particular the magneto) and of preventing the effect of centrifugal force, which caused the card or dial inside the compass to swing in a direction quite independent of North when the aeroplane was banking on a turn. However, a truly excellent compass is now in use in the R.A.F., far superior to that employed by the enemy. And indeed it would be odd if the Germans should have proved able successfully to compete in this direction with a nation whose commerce for several hundred years has been largely dependent on the excellence of its ships' compasses.

Probably the next most important instrument is the aneroid or height indicator. This is worked on a simple mercury principle, and is generally fitted with an adjustable dial which can be moved round so that the reading on leaving any given aerodrome is zero. Which reminds one of rather an amusing occurrence. A pilot left his aerodrome for a cross country flight on a very misty day, and carefully set his aneroid to 0. After flying for a couple of hours by compass he thought he must be nearing his destination. He could see nothing below him and so descended to 500 ft. On he flew at this height for another five minutes. Deciding to land, he was about to make a magnificent volplane, when suddenly the mist cleared and he saw the ground immediately underneath him, about 10 ft. below. His faithful aneroid still insisted that he was 500 ft. high. The explanation lay in the fact that the place he was about to land on was 500 ft. higher above sea level than the aerodrome whence he set out. Trifles like this are all in the day's work, and help to

teach the young pilot never to become the slave or dependent of mere instruments.

Next we have the tachometer or "rev. counter," which records the number of revolutions the engine is making per minute. This varies from about 1,100 (in rotary motors) up to 1,800 in water-cooled engines. The reading of this instrument is of great interest to the pilot, for modern aircraft are so carefully designed that their performance is effected enormously by even an extra 100 revolutions or so per minute one way or the other.

Another important instrument is the air speed indicator. This tells the pilot at what rate he is rushing through the air. This speed, of course, has no relation to the rate at which he is travelling over the ground. Nor is it intended to, for it is air speed which is of importance to the stability of the aircraft and the safety of the pilot. If a machine flying at 70 miles per hour is travelling against a 40-mile wind, the A.S. indicator will show 110 m.p.h.

Every aeroplane has a minimum air speed at which it must be thrust through the air if it is to be maintained aloft; and a maximum air speed in excess of which it cannot safely be nose-dived, for the various components will not stand the strain beyond a certain given point. It can be seen how essential is this device on a flying machine. Air speed indicators have been fitted to British aircraft for years past and it is interesting to note that the Germans have just commenced to use them.

The next item which calls for attention is the inclinometer. This is a curved spirit level fitted transversely across the machine. It is marked in degrees; and the pilot can tell from it at what angle he is banking his craft when turning.

With the addition of a miniature set of electric light clusters and a neat eight-day watch the list of instrumental equipment is concluded. The only remarkable feature of the watch is that if an aeroplane is left without a guard for five minutes after a forced landing, the watch mysteriously disappears!

There are several pressure gauges on the dashboard. One for each petrol tank, to indicate the pressure at which air is forcing the spirit to the engine; and another one to show the pressure in lbs. to the square inch at which oil is being driven through the various lubrication channels. On water-cooled engines a thermometer records the temperature of the water in the radiator.

Space forbids a detailed description of the controls. However, it may briefly be said that there is a swivelling foot-bar for the rudder; while a central lever, commonly known as the "joystick" actuates the elevation and banking of the aeroplane. A wheel at the side increases the angle at which the tail plane "attacks" the air, this being for rapid ascension. Two side levers control the speed and petrol consumption of the engine.

Then come the various articles of military equipment. These comprise the machine guns with their actuating gear, firing straight through the propeller, and controlled by a lever on the joystick; the wireless outfit in the observer's cockpit; and, finally, message bags, bomb sights, and camera release handles.

And some folk seem to think pilots are not very busy people!

London-Brindisi Aerial Mails.

ACCORDING to a correspondent of the *Times* in Rome, plans have been worked out for an aerial service between Nice, Rome, and Brindisi in connection with the projected London-Paris-Nice service, and in future extension to Brindisi and Salonica.

What Aerial Travel will Mean.

LECTURING before the Savage Club, at the Royal Automobile Club, on August 7th, Mr. Handley Page said that an air service between London and Marseilles, with one stop at Paris, was quite possible. The journey from London to Constantinople could be made in 20 hours instead of 72 before the war; Rome could be reached in 12½ hours instead of 42, and Marseilles in 8 instead of 23. He also gave figures referring to a service providing for 24 machines running a minimum service of six machines each way per day. Such a service, he said, could be provided for on capital of less than half a million, and the annual cost would be under £600,000. The cost per ton mile would work out at 20½d., and the cost per passenger mile to 1.36d. A 600 h.p. machine could carry comfortably six passengers,

totalling 900 lbs., and 3,500 lbs. of merchandise, and it would be commercially possible to carry the passengers at 1s. per lb. for 800 miles.

Sir Joseph Ward said he had decided, as postmaster-general of New Zealand, to introduce aeroplanes for carrying mails from one end of New Zealand to the other as soon as the war was over.

Preparing for the Transatlantic Flight.

"For the purpose of qualifying American and Allied airmen in this country for the contemplated Transatlantic flight, the United States Military Aeronautical Division has arranged for a great cross-country flight over a distance of 3,000 miles," says the *Times* correspondent in New York. The flight was to start from Dayton, Ohio, on August 15th. Eleven Americans were to participate in it, accompanied by English airmen. The Americans will use Curtiss machines of the "H" type.

Halts have been arranged at Cincinnati, Columbus, Toledo, Detroit, Indianapolis, St. Louis, Kansas City, Omaha, Des Moines, St. Paul, Milwaukee, and Chicago, and at each place exhibitions of flying will be given.

BONE AND SINEW FOR OUR AIRCRAFT.*

WINNING THE WORLD WAR IN THE FORESTS OF OREGON AND WASHINGTON.

By HORACE E. THOMAS.

THIS is the story of spruce. It is the account of an inspiring off-stage act in the drama of world war, with its setting in the mighty forests of the Pacific North-West. There, devoid of the glamour and thrill of the battlefield, thousands of soldiers, loggers and millmen are struggling to make the production of spruce timber adequate for the needs of the United States and her Allies. Their success will be no less a factor in the final issue than the tactics of the battlefield, and their campaign is being prosecuted with foresight, skill and energy.

No chapter of the war outside the actual battle zone is more enthralling than this one. Spruce has become a magic word. Of this wood are our winged fighters built—beams, struts, braces, all the wooden parts except the propeller blades, and even for these spruce is sometimes used, alone or in combination. So production of spruce timber in desired quantities is an enterprise to which the Signal Corps is addressing itself with a thoroughness that is bound to spell success.

That there is any shortage of spruce may be surprising. Most of us have thought of this wood as a commonplace one, realising that spruce forests cover vast areas. But there are many varieties, of which Sitka spruce alone is acceptable for aeroplane manufacture. And while white spruce, black spruce, Engelmann spruce, or some other member of the family may be found in many localities, Sitka spruce is a stranger to every part of this hemisphere except a narrow ribbon along the coastline, beginning in northern California, and continuing through Oregon, Washington and the islands and mainland of British Columbia into Alaska. In this 1,300-mile strip there are few facilities for lumbering save along the coast of Oregon and Washington. It is to these states that the United States and her Allies are looking for 95 per cent. of their aeroplane stock. It's a big order; but Uncle Sam has tackled the problem in a big way.

"Aeroplanes will win the war" is but another way of saying that spruce will win the war. Sitka spruce, the only variety here discussed, has been found the ideal. It has all the necessary qualities, particularly the prime requisites of strength and lightness. There are lighter woods, there are stronger woods; but the combination of lightness and strength is possessed by spruce alone. Other materials that have been tried, including metal rods and bamboo, have all failed in some important particular. Italy is even now experimenting with Douglas fir, doubtless as an expedient forced by the difficulty of getting the spruce; but fir is heavier. Port Orford cedar, which grows in southern Oregon and northern California, has been found acceptable, but the supply is small. Spruce is 10 per cent. better, in resilience and lightness, than any other wood; and it is just this 10 per cent. that will give us victory.

The production of spruce boards for aeroplanes is the most exacting business that our lumbermen face. Every piece must be perfect. The grain must be true and must not run out; there must be no knots, pitch pockets, or other faults. In producing any other material a certain amount of inferior stock is expected as a matter of course. But there must be no seconds in aeroplane lumber; the slightest blemish may spell disaster.

The spruce tree is a forest giant. With massive base up to 12 ft. in diameter, the bigger trees send their pointed tops to a height of 160 or 180 ft., standing sturdy and straight for 80 ft., to where the first branches reach out with their foliage of yellow green. The finest trees are selected for aircraft lumber. From the lower slopes of the Coast Range and the Olympics, where they have stood guard for five or even eight hundred years, they are felled and hauled to the mills. When possible the logs are cut into timbers upward of 40 ft. long, at least six inches wide, and two inches thick. This is ideal aircraft lumber; but many pieces may be discarded for imperfections for every one that is accepted.

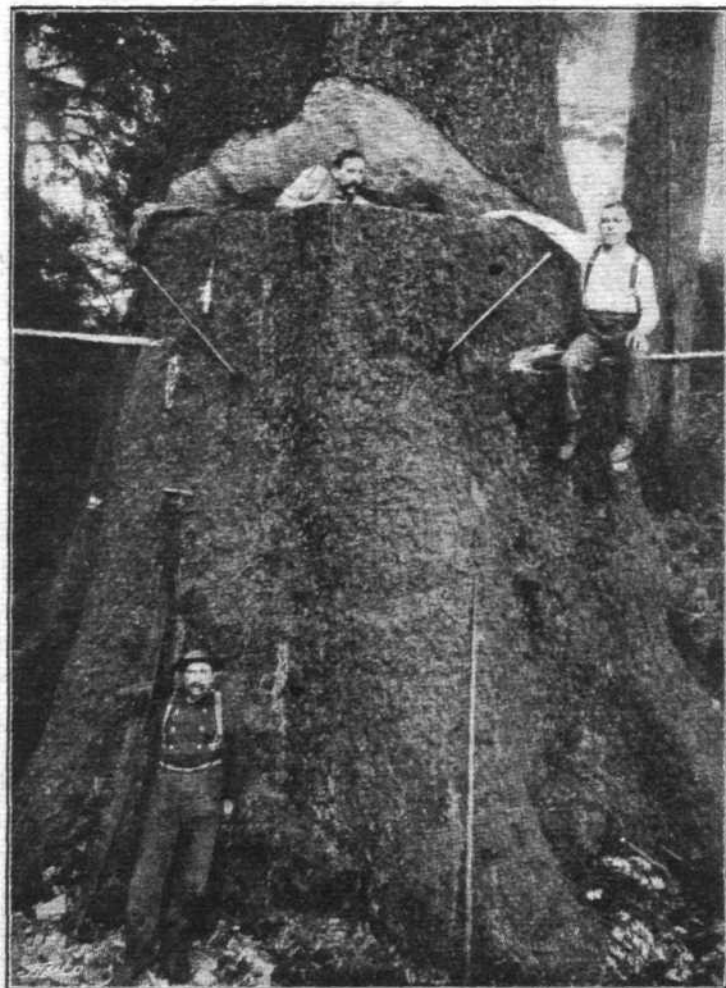
These large pieces are used for beams; the smaller cuts are fashioned into wing beams, braces and struts. It is comparatively easy to find clear spruce for the pursuit planes, slender falcons of the air, with wing spread of 20 ft. or thereabouts. It is far more difficult to cut unblemished timbers for a heavier machine like the Caproni, with a wing spread of 100 feet or more. Fortunately there are few defects in spruce that do not show on the surface—another quality that commends this wood to the birdman.

The wastage in aeroplane stock is very heavy. It has been found impracticable to size the parts at the mills, and when the timbers reach the factory much must be thrown away

The builders now use approximately 800 ft. of lumber in preparing the 167 ft. actually included in the average biplane. Wasteful as this may seem, it is a vast improvement over recent best performances, under which 2,400 ft. went for a single plane, but the engineers hope to reduce the figure to 600 ft. Laminated construction, masterpiece of the joiner's art, has resulted in considerable saving. Small pieces are more likely to be without defects than are large, and these, by scientific splicing, are built into beams as strong as one solid timber. No nails are used in joining these boards, or in putting together the frame of the aeroplane; for nail holes would weaken where every particle of strength must be conserved.

Fully awake to the importance of an adequate spruce supply, the Government has organised an industrial army to expedite production. The War Department last fall created the Spruce Production Division of the United States Signal Corps, and placed at its head, Col. Brice P. Disque, with headquarters in Portland, the heart of the spruce district. When he began work in November there were 3,000 men in the spruce camps of Oregon and Washington. Col. Disque immediately set about to increase this force to 10,000. He now has substantially the full quota. Workmen already in the woods and others who could be hired have been supplemented by enlisted men from the Signal Corps. This employment of the military in a war industry, though optional with the men so assigned, is a radical departure from the usual policy, and indicates, perhaps better than anything else, the Government's determination to have every foot of spruce it needs for our air fleets.

The head of the Spruce Production Division has not adopted a dictatorial attitude toward his men. He is appealing to them to speed up production as a duty to their country. Owners and workmen alike have been organised into a patriotic order called the Loyal Legion of Loggers and Lumbermen, the principal tenet of which is that its members are giving as valuable a service to the United States as are the men in the trenches. The Legion is promoted entirely by



Only in the Pacific North-West are such spruce trees as this to be found.

* Scientific American.

the Government itself, through the War Department. Its members are required to subscribe to this pledge:

"In consideration of my being made a member of the Loyal Legion of Loggers and Lumbermen, I do hereby solemnly pledge my efforts during this war to the United States of America, and will support and defend this country, against enemies, both foreign and domestic. I further agree faithfully to do my duty toward this country by directing my efforts every working day possible to the production of logs and lumber for the construction of army aeroplanes and ships to be used against our common enemies. I will stamp out any sedition or acts of hostility against the United States Government which may come within my knowledge, and I will do every act and thing which will in general aid in carrying this war to a successful conclusion."

The labour shortage has been the greatest handicap in meeting the demand for aeroplane spruce. This is almost a platitude, for obviously the spruce itself is there—we merely have to go and get it. But at a time when there is plenty of work in occupations commonly regarded as more desirable, it has been difficult to attract labourers to the forest. This trouble has been aggravated by the propaganda carried on through the I.W.W. and other agencies, with the evident

ference. He presented his plan to take over control of hours, wages and living conditions; and the mill men, as a patriotic duty, approved it. A few days later he conferred with the labour delegates, and they too voted unanimously to place their grievances in his hands. His next step was the announcement of a working day of eight hours, instead of ten, with pay and a half for overtime. He put into effect a stipulation among the employers to provide clean bunkhouses and bedding. A requirement that the lodgers furnish their own bedding has always been a serious point of contention.

The arrangement was received with general approval. It applies to 62,000 men in the lumber industry of Oregon and Washington, including those getting out Douglas fir for ships as well as the spruce workers. In conceding the eight-hour day the owners gave up a fight they have been waging for years. They have not fought the eight-hour day as a principle, but have opposed its application to the Pacific Northwest until it should be put into effect throughout the United States—a reasonable enough attitude. The result of the programme outlined has been the same here as in every other industry to which a similar one has been applied. To the credit of labour be it said that once it is clearly established that the men are really working for the Government and not

for private interests, once they are made to feel that there can be no possibility of undue private profit for their employers from their efforts, they have been willing to put forward those efforts without stint.

Here are a few things which the Spruce Production Division has accomplished. It has reduced overhead charges anywhere from five to fifteen dollars a thousand feet. It has increased production until in February it was four times what it was when Col. Disque took hold. It has put 2,000 soldiers with logging experience into the woods. It has stabilised labour and secured more and better labour; it has reduced hours of work, and improved working conditions. It has organised a traffic department that handles 400 cars a day,

and that gets them through to the Atlantic coast in ten days instead of 50. It has bought \$1,000,000 worth of wire rope, \$1,500,000 worth of logging engines, \$700,000 worth of steel rails—all equipment that was desperately needed, but which the operators could not get delivered to them. It has kept the sick rate in the spruce division below 2½ per cent. It has opened a central cutting plant equipped to utilise logs and parts of logs that formerly would have been discarded. Special machinery saws sections at any angle from timber with curly grain, knots, or other faults ordinarily sufficient for rejection; and in this way is got 30 per cent. more aeroplane lumber from the logs than in an ordinary mill.

The heads of the Spruce Production Division are not going to have much idle time while the war lasts. The employment and maintenance of an industrial army is but one of the tasks devolving upon them. Additional logging roads are being built and more sawmills erected. The finished product must be inspected, classified, and rushed to the aeroplane factories in the East, or to eastern ports for shipment to the factories of our Allies. Oregon and Washington mills are putting spruce first. The railroads are giving spruce shipments preference over all other business. That spruce production is to have the right of way over everything else is the general understanding.

With the increasing importance of air warfare and the promise of continued interest in aviation in times of peace, it is good to know that our forests contain great quantities of aeroplane spruce. In Oregon and Washington alone there may be found, roughly speaking, ten billion ft.; while the great untouched forests of British Columbia and Alaska could supply for years a world a-wing. So the raucous discord of the saws in a hundred mills of our Pacific coast is really a patriotic melody which we may hope to maintain for many many years.



Aeroplane spruce on the way to the sawmill.

object of holding back production. Strikes had been fomented frequently and have badly crippled the industry. There have been, besides, deliberate attempts to destroy property, both by direct and by indirect methods. During a fire in the Olympic National Forest last summer, a force of men employed to fight the fire actually struck while the flames were spreading through the timber. Many "accidents" to machinery have delayed operations. Emery dust thrown in bearings, spikes driven in logs that are to be sawed, boilers drained while the engine fires are banked and fires in sawmill property are among the most frequent of these. The impudent and insidious methods of the sabotage advocates are illustrated by cards distributed among the loggers, from which this is an actual quotation:

"Don't drive a spike in a log, as it isn't good for the saw that hits it; don't leave a dried log buried in combustible material near the railroad track, as a locomotive might come along and set fire to it—and you would be a hundred miles away."

However, the I.W.W. has been fought until the number of "Wobblies" in the spruce camps has been greatly reduced, while those who are left are afraid to act with their former boldness. In his fight against disloyalty, Col. Disque went to the root of the evil—the professional trouble-maker and the unsatisfactory working and living conditions. The agitator was treated with scant courtesy. He was told very plainly that it was not healthy for him in the camps—and he got out, the great body of the working men as well as the employers applauding his departure. Then Col. Disque turned his attention to the conditions that caused dissatisfaction.

First he armed himself with authority from the President to commandeer every foot of timber in the Pacific Northwest. It was a mighty weapon to wield against the sawmill men, if it became necessary; but it did not. The Colonel at once called more than 200 mill owners into secret con-

REVIEWS.

"LA GUERRE DES NUES."

Racontée par ses Morts.

By M. JACQUES MORTANE.

"Broke to every known mischance, lifted over all
By the light, sane joy of life, the buckler of the Gaul,
Furious in luxury, merciless in toil,
Terrible with strength renewed from a tireless soil,
Strictest judge of her own worth, gentlest of man's mind
First to face the truth and last to leave old truths behind—
France, beloved of every soul that loves or serves its kind!"
—Rudyard Kipling.

It was George Bernard Shaw, was it not, who confessed that he found himself unable to criticise adversely a performance by Ellen Terry, no matter the play, so completely had this gracious lady cast her spell upon him. In somewhat similar case am I, when confronted by a book from M. Jacques Mortane.

"La Guerre des Nues" is a worthy pendant to the trilogy this beguiling writer has given us. It has been wrought out of letters written to their home-folk by pilots now dead, and these many-coloured epistles have been blended, as might be expected, with a masterly tenderness and a befitting reverence.

Some are so light, so raucy, so shot with the hues of the living sun-light, and so flecked with the laughter the gods have given, that it is hard indeed to believe that the gay-hearted boys who wrote them lie cold and still. The book may not make the reader happy—it cannot fail to make him proud. Proud that in a world defiled and agonised by ravening beasts the young knights go out with "Sursam corda" for their device, and an easy jest to cover their feelings. And proud to think that we and our one-time "gentlest enemy, France" are together, "on the side of the angels."

In fact, the whole book is marked by a nobility and pride which are the deeper for being constrained.

As I read it, I found my mind harking back to old days in Paris, and old sights, half forgotten. The sombre grandeur of Napoleon's tomb in the Invalides, where he who would see the great sarcophagus, devoid of all inscription, must bow his head to do so. A carved phrase, bitter cold and resolute, bearing the date of 1870, calling on Frenchmen to remember certain matters, and the grey statue of the lost province of Luxembourg, draped in wreaths of immortelles. A change in the voice of Sarah Bernhardt when she gives those lines of Rostand's on the cathedrals of France, and the ringing, insurgent message of the "Marseillaise."

Yes, M. Mortane, we perfectly understand.

I sometimes think that when the rest of us are but forgotten dust some of the stories in this book will not be utterly lost, and our children's children will read how the men of our time fought Apollon in the air, seated in flimsy kites of cloth and timber, and, reading, will marvel.

Such tales as the Capitaine Roeckel tells so casually, after he has enquired solicitously about all his folk, and given them heartening little messages about his well-being, and the comparative safety of his work in the "Winged Army."

"Yesterday I went out on a reconnaissance over the great battle between Virlon and Longwy. Seeing a German dirigible on the ground, I flew over it to drop darts, in spite of the cannonade which welcomed me as soon as I got within range."

"At the second salvo a high explosive shell made me nose-dive, but after considerable trouble I managed to straighten out again, although their stuff was exploding in thunders all about me. I could see nothing. . . . Suddenly there is a formidable crash under my machine; the motor stops, and the little machine, buffeted and flung about by the terrific displacement of air, starts to spin slowly down. It gathers speed, and drops two thousand metres like a stone. In vain I struggle to rectify matters, the controls will not answer. I drop through a thick layer of cloud, and see directly beneath me the citadel of Longwy in flames. It is towards this raging furnace we are rushing! At about 1,000 metres the machine changes position, and begins to spin giddily on the tip of the left wing. I make desperate efforts to turn her head out of it, but it is sheerly impossible."

"Two hundred scant metres from the flames—and we slacken slightly, perhaps the heat, that I can feel already, has produced a favourable upward eddy! She begins to answer the helm. With the strength of despair, I wrench her right again. But where can I land? In the flaming citadel? There, at least, I should not be made prisoner. . . ."

"My observer shouts to me: 'There among the troops—perhaps they are Germans!' We go into a long glide, and at 100 metres I recognise our plucky infantry. There is yet a chance; I land as close to them as possible, bullets whistling about us as the wheels touch the shell scarred ground. I would do thirty-six loops to get out of this hell! The infantry has my unreserved appreciation. At last we are sheltered, and I return, *clopin-clopan*, to my nest."

The book bristles with the names and deeds of famous men, Capt. Guynemer and the Sous-Lieut. Dorme, Matton, Quennehan, and Triboulet, Rockwell and Ball, a gallant host departed than whom no man's love was greater. Intimate little stories, told with a warm sincerity. The too-brief career of a personal friend of the writer, the adjutant Poisard: "he was my 'blue,'" says M. Mortane, and perhaps nobody but a Frenchman could know what is in that simple little phrase, for the "bleu" in the French service is an older and war-hardened soldier into whose charge the new recruit is given, that he may guide, philosophise, and generally befriend him.

We may safely leave to men of this temper the punishment of that fool, "who has said in his heart, 'There is no God,'" to those who fought—"till Death, marvelling, closed on them," and of whom Kipling has written:—

"They bought us anew with their blood, forbearing to blame us,

Those hours which we had not made good when the Judgment o'ercame us.

They believed us and perished for it. Our statecraft, our learning

Delivered them bound to the Pit and alive to the burning

Whither they mirthfully hastened as jostling for honour,
Not since her birth has our Earth seen such worth loosed upon her!"

R.H.B.

"OUTWITTING THE HUN."

Nor all the adventures in a flying man's career are met with in the air—at any rate not in wartime. Certainly, Lieut. Pat O'Brien has given us one of the most thrilling books of the war, and yet his work as a pilot was early cut short. Three chapters suffice to tell us what happened from the time he left the States to join the R.F.C. until he awoke to find himself in a German hospital. Then his chances of regaining his liberty seemed slender indeed. Not only was he badly wounded in the mouth, but as he stood six feet two inches the possibility of slipping away unobserved was a remote one. Although he resolved to take any opportunity which offered to get away, it was a bold bid for freedom which he made when he flung himself from a train going full speed, and by its very audacity it thoroughly deserved its success.

From that point, Lieut. O'Brien's progress, by devious ways and dark, during seventy-two days—or rather nights—until he dug, with his bare hands, a passage under the triple barrier of barbed and electrically charged wire which to-day marks the boundary between Belgium and Holland, was beset with hazards. If the book falls into the hands of the Germans, they may well tremble, the bombastic proclamation of their War Lord notwithstanding, at the task of endeavouring to defeat a nation which produces such resourceful sons.

It is a book which every one who has the spice of adventure should not fail to read. True, Lieut. O'Brien has not the art and craft of the professional story-teller, but truth is ever stranger than fiction, and the book is not the less fascinating if the writing does lack a little polish here and there. It is published by Mr. William Heinemann, and the price is 6s. net.

"SHORT FLIGHTS."

In his dedication "Spin" tells us that "Short Flights with the Cloud Cavalry" is a maiden effort, and he may well be proud of it. He has the gift of description, and contrives successfully to give us a couple of dozen peeps into the *intime* of the newest order of Knights-Errent on active service. He attains his object every time with a minimum of words and without any straining after effect, so that whether his subject is grave or gay, there is always a convincing air of reality in the telling which makes the reader ask for more.

Each of his little snapshots introduces us to a typical personality of a flying squadron, or to some particular phase of its work, and although, as he points out, times have changed somewhat—"no longer do mist and clouds mean an indolent day spent in exploring some ancient French Town"—since they were written, the "intrepid aviators" are still the same; the main difference is that their work has been speeded up. "Those indispensable people," the mechanical maniac,

who is always producing gadgets which don't work; the squadron lunatic, who is given to practical joking but is as steady and reliable as any man when there is a man's job to be done; the War Baby who acted the part of the leading lady in the amateur theatricals to such perfection that he was wooed by a dashing officer; the cocktail manufacturer, whose interest in his work never flags; and the piano player, who is ready at any old time to sit down and play anything from a classic opera to a very much syncopated fox-trot, these are not exclusive to any squadron or to any generation of pilots.

The sketches will awaken past memories among those who fly—or have flown—while those who take an interest in the war in the air will get an insight into the lives led by officers of the R.A.F. in France and other places. Messrs. Hodder and Stoughton are the publishers, and the price is 5s. net.

"THE NEW MOON."

THE Gospel of Reconstruction is being preached loudly and widely, but it is to be feared that much of the good seed is falling on stony ground. The matter-of-fact way in which we live and have our being, with all our goings and comings ordered by D.O.R.A., does not greatly assist us to conjure up visions of the England—*et Britt. Omn.*—we hope to see emerge from the melting-pot of war. It is all very well to draw up schemes and to discuss them, broadly and in detail, until it would seem that there is not another word to be said on the matter, but there will inevitably arise the doubting question, "But how will it work?"

So Mr. Oliver Onions has given us a romance of Reconstruction which will probably do more to further the Industrial Reconstruction campaign now in progress than all the speechifying put together. In the *New Moon* we are shown in practice the principles set forth in Mr. J. P. Benn's "Trade of To-morrow." That may sound somewhat terrifying to the timorous reader, but he need not fear—the *New Moon* is neither boring nor dry-as-dust, as most novels with a purpose are. Into his picture of England as it may be after the war Mr. Onions has so deftly woven reconstruction and a sturdy love-story that it is never dull or uninteresting. It is a pity, however, that having set out to write a romance, Mr. Onions should have changed his mind at the end and turned it into a dream, but possibly he had in mind "The Army of a Dream"—that story of Kipling's which gives rise to such poignant questionings when read in the light of the experience of to-day. May his work meet with a better fate—may it be not only read but acted upon. The book is published by Messrs. Hodder and Stoughton at 6s. net.

"PAINTING BY IMMERSION AND COMPRESSED AIR."

CONSIDERING what an important part painting, varnishing, and allied processes play in the life of any engineering structure, it is surprising that the subject has not received more attention. At one time what study was given to the matter was mainly centred on the composition of the medium, but for some little while now it has been recognised that a very great deal depends upon the way in which the material is applied. While the old slap-dab method with the aid of a brush was simple and

gave good results, it was laborious, and even at the hand of skilled workers it was not always easy to ensure an even coating over the whole surface. With the object of securing economy of labour and material two methods have been developed. One is to completely immerse the article in a bath of the paint or other coating medium, while the other is to use a pistol or spraying device operated by compressed air. The former system is especially suitable for small articles, but owing to the size of the bath which would be required it is not practicable to employ it where relatively large structures have to be dealt with. The second system can be used almost anywhere, and has many advantages over the brush method, and doubtless when these become more fully realised there will be wider use made of the system in aircraft factories, for such work as varnishing. It has been tried for the application of dope to wings, and while difficulties were experienced at first with some devices we understand that these have been overcome. In his book under the above title Mr. Arthur S. Jennings describes the construction and method of working of the various sprayers, besides dealing with the subject generally, and those who are interested will find the book full of useful and practical information. It is published by Messrs. Spon, and the price is 10s. 6d. net.

"AERONAUTICS IN THEORY AND EXPERIMENT."

Now that aeronautics has definitely attained the rank of a science, and it is being recognised more and more that its problems are worthy of the serious attention of the student, there is a demand for text-books. Several excellent ones have already appeared, and one of the best is that written by Messrs. W. L. Cowley and H. Levy, under the above title. The authors are both engaged in research work at the National Physical Laboratory, and in the writing of their book they have had the advantage of the friendly criticism of Sir Richard Glazebrook, Dr. Stanton and Mr. Bairstow. One of the most fruitful sources of information which the aeroplane designer has had to draw upon has been the annual reports of the Advisory Committee for Aeronautics, but they are nearly all out of print now. To a large extent, however, this new book fills the breach, as Messrs. Cowley and Levy have embodied the essential information contained in those reports and then have arranged it in more convenient form, at the same time revising it, where necessary, in the light of the most recent knowledge. The book provides a sound and scientific treatment of the fundamental principles upon which aeronautics is based, and it also indicates what are likely to be the lines of further development. It is divided into five parts: In the first the theory of fluid motion is considered, experimentally and mathematically, as well as the theoretical basis of the transition from the results of model experimental work to those for the full scale. In Part II the various parts of an aeroplane are considered aerodynamically, while Part III is devoted to strength of construction. Part IV deals with the theory and design of the airscrew, and in Part V the various aspects of the stability of the machine are discussed. The price of the book is 16s. net, and it is published by Mr. Edward Arnold.

Another Zeppelin Down.

AN Admiralty communiqué states that British light forces, accompanied by aircraft of the R.A.F. contingent, reconnoitred the West Frisian coast on the morning of August 11th. "The British forces were heavily attacked by German aircraft and six motor boats failed to return. With this exception we suffered no damage or casualties. The aircraft attacked a German airship north of the island of Ameland and destroyed it, bringing it down into the sea in flames from a great height."

According to Dutch reports the motor-boats were bombed by aeroplanes, three being sunk and the other three disabled. Nineteen men were rescued by Dutch torpedo boats. One German seaplane was brought down the crew being rescued by a German destroyer. The Zeppelin is said to have fallen into the sea about seven miles from the coast. The Germans have officially admitted the loss of an airship and an aeroplane.

The Zeppelin Raid.

Of the five Zeppelins which attempted to raid England on the night of August 5th not one reached the land. The one which was destroyed has been described in the German Press as one of the most valuable; it was commanded by Capt. Strasser, who was head of the Navy Airship Department and had led many of the airship raids on England. When attacked the destroyed Zeppelin was 17,000 ft. up; the type

is believed to achieve—after dropping its bombs—20,000 ft. But our aviators had no difficulty in rising above her. She came down in flames about 40 miles off the coast at 10 o'clock at night, the attempt to cross the coast having been made about an hour earlier. There was no sign of any survivors, but it is believed the airships carried a complement of 18 officers and men in addition to Capt. Strasser.

Dutch Release Rescued British Officers.

FIVE British airmen, Capt. H. Rampling, Lieuts. L. W. Wilson and L. C. Bower, and air-mechanics R. W. Wootton and H. B. May, who were rescued on August 2nd by a Dutch trawler in the North Sea outside territorial waters, and were taken to Holland, have been released by the Dutch authorities.

British Flyers in Holland.

DELAYED telegrams from Holland state that Sergt. Partridge died from wounds after landing in Dutch Flanders. His companion, Sergt. Good, was unhurt and went on July 26th to Groningen. Sergt. Partridge was wounded by a German shell which burst beneath the machine.

On July 31st Lieut. L. W. C. Pearce and Sec. Lieut. Observer F. H. Bugge were forced to land at Valkenisse, near Walcheren, after bombing Zeebrugge locks, the water tank of their machine being damaged by a piece of shrapnel at a height of 14,000 feet.

AIRISMS FROM THE FOUR WINDS.

Is it instinct with our air-pilots which enables them to translate their adventures so happily and easily into words? Or is it the comparative novelty of the whole business which lends itself naturally to a story in sequence—every item almost being necessarily a novel experience worth recording? At least the fact remains that a very large section of our most notable men in the Flying Service has, without apparent effort put forth tales of wonder which, fortunately for them, command not only wide public appreciation, but substantial returns from the publishers who serve up the appetising wares. As an outstanding instance of the facile "pen" of a flying "ace," we have the "Adventures in the Flying Corps," of the late Maj. J. T. B. McCudden, which are now being published in the *Evening News*. It is Mrs. Alec Tweedie, his literary sponsor, who we have to thank for having given away the author's method of manufacture of this human document. Mrs. Tweedie thus tells the tale in the *English Review* :—

"It is a plain tale plainly told by its own hero, who did not even know he was the hero. And yet McCudden fought well-nigh 200 aerial fights, and twice actually downed four Huns in a day, and once got three single-seaters in twenty minutes.

"His 'book' is a wonderful production. He came to me some weeks ago, with an introduction from my son, to ask how many words would be wanted, &c. 'Sixty to eighty thousand' was my reply. He looked aghast—not having the slightest idea how many he had scribbled in pencil, on both sides of the page, in a sort of copy-book. It was hardly an author's manuscript, but the very simplicity of the style of that 1,000 words was its charm, and showed his capacity for doing a thoroughly readable book describing five years in the Royal Flying Corps from the bottom rung to the top pinnacle.

"Back to Scotland he went to do more, and actually managed to write 40,000 in three weeks, in spite of his daily

instructing for fighting pilots. One evening (June 10th) he walked in again, about 10.30 p.m., looking very red and sun-burnt, with the precious new material under his arm. He had left Scotland that afternoon, and had flown 400 miles in two hours and three-quarters, had had a bath and some food and explained that the wind, luckily a following one which allowed 140 miles an hour, had caught his face and the sun had scorched it.

"There," he said, "are 40,000 words more, and written in pencil on *one* side of the paper only, and I've been its aerial postman," with a merry laugh. He had wonderful eyes; the dark blue iris seemed to cover the entire pupil, and his long eye-lashes were darker than his fair hair. He was a good-looking boy, but what really impressed one more was his straightforward way, thoroughness, good calm common sense, his honesty of purpose and his youthful joy of life. There was no swank about him. He had simple manners, and spoke in a simple way with true sportsmanlike spirit.

"I'm sure now the war will be a long one," he said. "I don't intend to take any unnecessary risks with dashing stunts. I mean to kill Huns, but at my own time; I won't bustle or do anything foolish like my brother who was killed 16 weeks ago." And yet he was killed in an accident.

"My last recollection of him—and that one only a few hours before he was killed—was a smiling young man rushing off to his waiting taxi 'as I've a crowd of little odds and ends to do before I pick up my machine, but I'll be back in three months, and hope my book will be out before then. I'll send you a line from France to-morrow.'"

ATHENS and Salonika are being postally joined up *via* the air. General D'Esperey has, by reserving a number of machines for the purpose, made this possible, which follows upon a service between Athens and Janina, which is now to be made

Ministry of
Information.

An ingenious
telescope
stand at an
aerodrome
on the Brit-
ish Western
Front in
France, made
from the
wheel of a
cycle.



a regular delivery. This is but a beginning, so it is said, Greek enterprise hoping to be well in the front in the field of aerial mails.

WONDER whether General Brancker came back to England from the United States by aeroplane? Or have we got something superlative in the way of greyhounds of the sea? Anyway, from the other side came cabled reports of General Brancker's doings and sayings in Washington on August 8th, duly recorded in the Press this side, but it was certainly General Brancker in the flesh who was down Twickenham way last Saturday when Princess Patricia christened an A.S.C. "Camel" gift for the R.A.F. There was nothing of the hump apparent about the somewhat unlooked for visitor.

So our one and only "H.P." is no more. At least so laments *Le Matin* of August 9th—and justifies it by a pæan of praise that only those who are no longer in a position to take advantage of it, can possibly expect. To read one's own obituary notice with frillings is not an unmixed blessing—sometimes. In "H.P.'s" case it does not seem to have had any ill-effects, judging by the enjoyment which the victim appears to have got out of its perusal. At the same time, the nation has a lot to be thankful for that *Le Matin* is not as accurate in its information this session as it usually aspires to. When we rang up patriot Handley Page on Saturday to condole with him and to ask him all about it, it was the cheeriest corpse which, in a very fine imitation of Handley Page himself, promptly replied "Na pooh; far too busy getting out still more hefty Hun strafers to have time to think about passing in my checks yet awhile. Sorry if you are disappointed." So there it is. Now it is up to *Le Matin* to do a resurrection stunt.

WHAT'S in a name? Wasn't it Lloyd George who originated the 9d. for 4d. stunt, which has hung so clingingly on our weekly labours ever since? And now again it is his name which has worked another little financial wonder in even more astounding ratio. Put up for sale by auction, after it had been read to the audience at Worthing Pier Pavilion last week, a copy of the Prime Minister's message to the nation was sold for 20 guineas, which will be given to the local "Hut Week" Fund of the Y.M.C.A. The purchaser was an airman, Mr. E. G. Benham, who paid another five guineas for the envelope in which the message was sent.

THE HUN. By L. W. FAUCETT.

THREE undercarriages, one wing tip, yards and yards of gauze, have I consumed from British stores. As a result of me, one instructor is prostrate with neurasthenia and the

rest are tipping on the verge. One perfectly good British Rumpety have I brought down, decidedly out of control. My every flight is a jaunt of destruction for the cause of King George. I'm the chap who, in pre-war days, rocked the boat and fired the gun that wasn't loaded. Now I'm in the R.A.F., and I'm the lad who keeps your mechanics toiling till the midnight wick wanes, the *raison d'être* for aircraft depôts, the *sine qua non* of crashes—in other words, A HUN!

There are Huns and Huns, the difference being that some of us are worse. Have you met the shy, young tabby-boy, who bashfully asks for joyfls—a coming 'acc, but successfully camouflaged for the present as a Hun? He sits at the same table with the wash-out, who always has wanted to be an A.E.O. He is positive that he is unsuited for the air before he has been off terra most firma. And then, woe is me; there's the numskull! In various squadrons he is known by various names—"the invalid above the eyebrows," "the bloomer with bats in his belfry," or perhaps "the chap with things in his thatch." By any other name he would be as dreaded. If the lot were fastened in flight as Alpine climbers, there wouldn't be a one to hold the others up, for all are hopelessly duds in the dome.

Another Hun whom instructors see coming is Sweetieboy, the swanker, who thought the uniform would become him. Speaking technically, at the 'drome he spends most of his time wangling mikes by swinging lead; but he does his best flying in Piccadilly, where even the birds adore him.

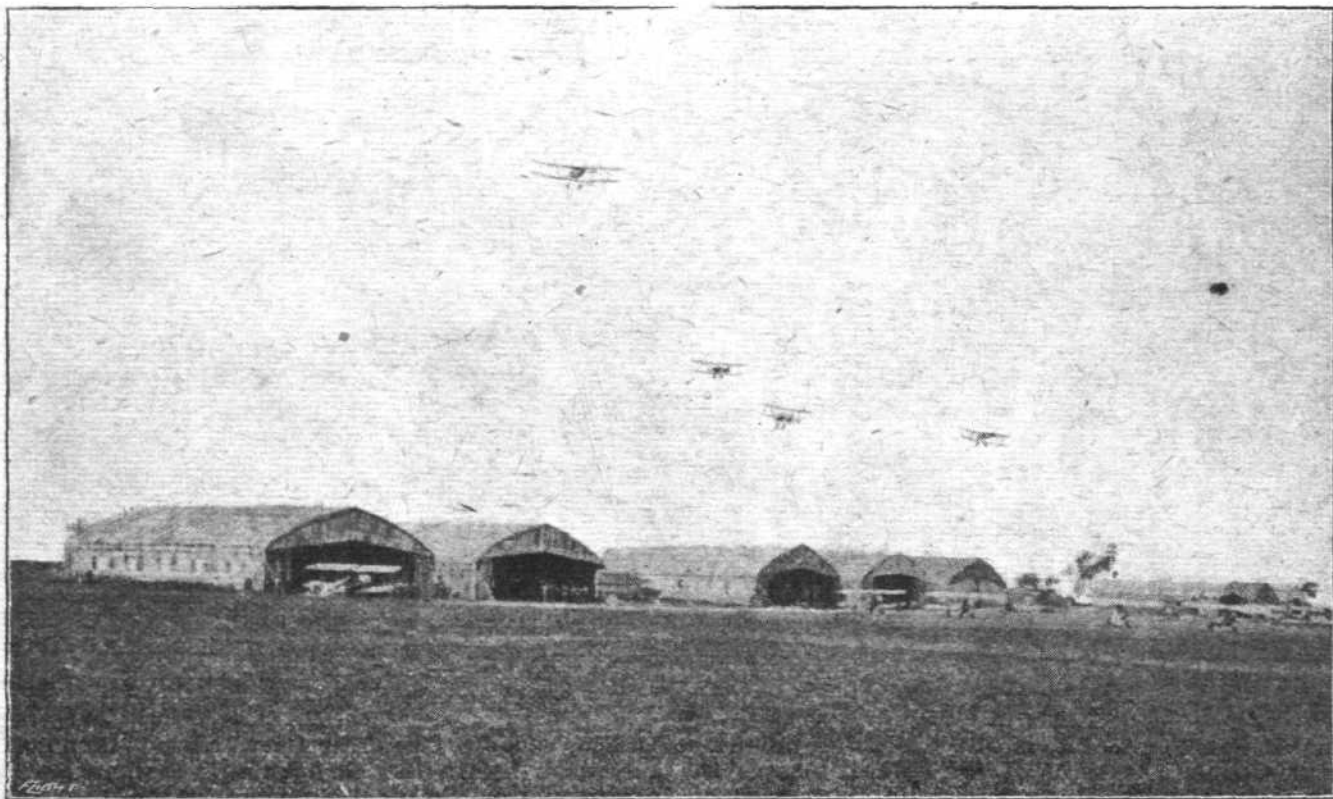
Outshouted by the funklers, swankers and duds, but far from outnumbered, are the sportsmen—keen, modest and capable—true Britishers.

Such are the Huns!

Once, as Fledglings, we were wont to swank, but no longer do we theorise nonchalantly about that mysterious angel of incidence, which in some wonder-working way wafts the bus heavenward! No longer do we speak off-hand of the stroke of the Clerget cylinder that runs so smoothly in its piston! And never again shall we startle fond, admiring parents, with startling facts of aerobatics, nor will Tom Brown again tell grandfather how, after being sucked along the hollow crankshaft and through the inlet valve into the cylinder, the spark is compressed, fired and exhausted to the atmosphere. Alas! these days are gone for ever, and the Fledgling has become a Hun—a very humble animal, indeed.

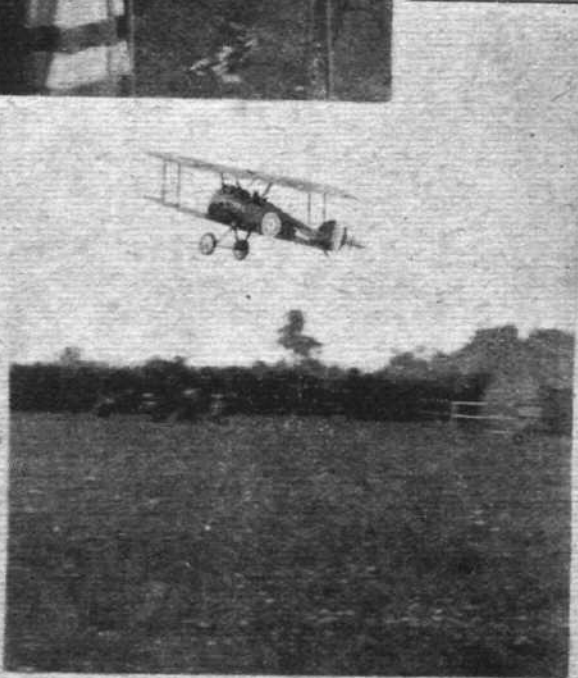
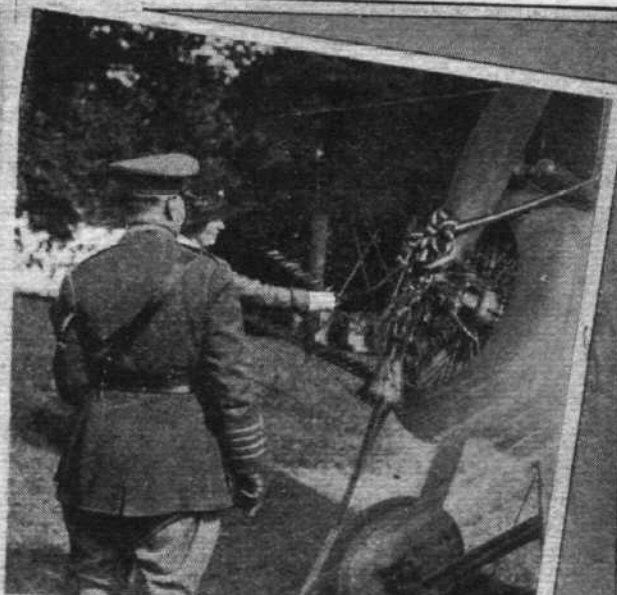
It happened this way.

The instructor is ready. The cocky Fledgling steps up and takes his seat. At once the engine roars like a Judgment Day barrage. The machine gathers speed. Before the erstwhile swankling is aware he is in the great unknown, a neophyte in a new element, a helpless passenger belted to a wild creature with the fickleness of an Irish colleen, the fury



Ministry of Information.
An R.A.F. patrol flight leaving the aerodrome on the British Western Front in France for the German lines.

NO KEY



Princess Patricia christens the A.S.C. Aeroplane, "Osterley No. 1" Camel, at Isleworth.—1. Bishop Taylor-Smith, Chaplain-General of the Forces, blesses the aeroplane before the christening. 2. Princess Patricia christening the Camel by smashing, with a silver hammer, a bottle of champagne attached to the prop. 3. Lieut. H. C. Sanderson, who was to pilot the plane, being presented with a silver cigarette case by the Princess. 4. The Duke of Connaught interested in the aeroplane getting away, with General Brancker, just back from America, watching the proceedings. 5. "Osterley No. 1" takes the air gracefully.

of a Mexican bull, the tricks of a Texas broncho, and driven fiendishly by a goggled demon!

Zoom!! Bank—turn and roll! Bump!! Dive, twist, loop and stall! A spin—down and around—and then two loops! No longer does the earth rotate on an axis: it writhes on a universal joint! The poor apprehensive Hun grips the sides of the cockpit and watches fields gallop past, forests tango, villages undulate—the whole world convulsed with corkscrew contortions! Suddenly the earth rushes up, and somehow arranges itself beneath the snorting creature. Is it over? Yes, at last. The pale-faced subdued Hun steps out. He tries to tell smiling onlookers of the glory of a first flight, while a tumultuous tummy threatens a public exposure.

Like the Saturday night, who said sometimes his key turned and the house stood still, but generally he held the key while the house went round, he is still not sure the horizon is fixed; but on another point he is positive—that

henceforth he will be a humble learner in the newest of sciences, and a meek beginner in the greatest of sports. Humility came with his first joyfly: 'tis then the Fledgling becomes a Hun!

The instructor noticed the white, fleecy clouds that were drifting into the West as sheep to a fold, the evening lights and shadows playing on a sky cobbled with rolling billows, the sun shining deeply red through a mist gorgeously tinted. Also he spoke of the ferocious appetite that the rush of spring air had given him. The poor Hun saw only a pressure gauge with the pointer quivering about the numeral "3," a portion of cawling and a nightmare parade of past sins—and he had no appetite whatsoever.

Seniors of mine, I confess. I am that Hun! Kindly do not laugh—you were there yourself once. To you and to the world at large I apologise for my indiscrete and silly ass statements as a Fledgling; and meekly and humbly I beg to subscribe myself—simply, a Hun!

INTERNATIONAL AIRCRAFT STANDARDS.

(Continued from page 399.)

3537—Specifications for Alloy Steel Seamless Tubes (200,000 Lbs. per Square Inch Tensile Strength.)

GENERAL.—1. The general specifications 1Gr shall form, according to their applicability, a part of these specifications.

USE.—2. These tubes are suitable for airplane axles and structural members.

MATERIAL.—3. The material for these tubes shall be chosen from the I.A.S.B. standard steels listed below.

MANUFACTURE.—4. (a) The tubes shall be cold drawn and shall be furnished heat treated.

Heat Treatment.—(b) The tubes shall be heat treated to meet the physical properties specified. The quenching shall be done in oil. Tubes which fail to meet the physical tests may, at the option of the purchaser, be reheat treated.

(c) Any tube may be rejected at any time because of injurious defects or faults in the steel which are revealed by manufacturing operations, notwithstanding that it had previously passed inspection. Such rejected tubes shall be returned to the manufacturer at the latter's expense. This clause shall not apply to materials fabricated after export.

WORKMANSHIP AND FINISH.—5. The tubes are to be smooth, of the section specified, and within the permissible tolerances as to wall thickness; of uniform diameter, free from scale, dirt, specks, longitudinal seams, laminations, grooves, and blisters, both internally and externally.

PHYSICAL PROPERTIES AND TESTS.—6. The tubes shall have the following physical properties:—

Tensile Test.—(a)

	lbs. per sq. in.	Kilos. per sq. mm.
Minimum tensile strength	200,000	140.6
Minimum elongation in 2 inches (50.8 mm.) ..	5 per cent.	
Minimum elongation in 4 inches (101.6 mm.) ..	3 per cent.	

Bend Test.—(b) Each axle tube shall be supported as shown in Fig. 1 and a load applied near the unsupported end which

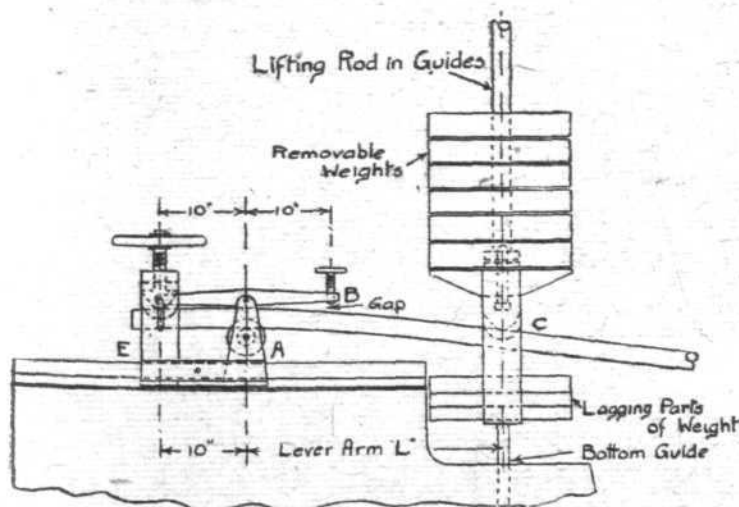


FIG. 1. DIAGRAM OF AXLE-TESTING APPARATUS

will develop a tensile stress of 185,000 lb. per square inch (130.0 kg. per square mm.) in the highest stressed fibres of the tube. (See formula below.) The load shall be applied

Siamese Flyers in France.

BOTH by build and temperament the officers of the Siamese Aviation Corps who have arrived in France appear to be peculiarly suited for their work, for they have extra-

ordinarily keen eyesight, are of small stature, and are very daring. They will complete their training in France. They wear khaki uniform, much the same in cut as that worn by the British troops.

SELECTIONS OF TEST SPECIMENS.—7. **Tensile Test Specimens.**—(a) One tube for the tensile test shall be selected at random from each lot of 100 tubes or less. In case the net sectional area of the tubing exceeds 0.85 sq. in. (548.4 sq. mm.), two standard test specimens may be machined from the tube before heat treatment. These specimens shall then be heat treated with the lot of tubes they represent, and must show the physical properties specified.

Bend Test Specimens.—(b) One end of each tube shall be subjected to the bend test, and one tube in ten shall be tested at both ends.

DIMENSIONS AND TOLERANCES.—8. (a) The following tolerances will be allowed on the outside diameter of tubes:

Tubes 1.5 in. (38.1 mm.) diameter and under	0.003 in. (0.08 mm.)
Tubes over 1.5 in. (38.1 mm.) diameter	0.005 in. (0.13 mm.)

(b) The variation in wall thickness of tubes may be 10 per cent. of the dimensions specified.

(c) In no part of any tube shall the departure from straightness exceed 1 in 600.

(d) Tubes shall be straightened before heat treatment. After heat treatment the tubes must not be re-straightened, until the bend test has been applied.

DELIVERY, SHIPPING AND PACKING.—9. The tubes shall be well oiled and delivered in boxes not exceeding 220 lb. (100 kg.) gross weight.

Chemical Compositions of Standard Alloy Steels.

NICKEL STEELS.

No.	Carbon.	Manganese.	Phosphorus, maximum.	Sulphur, maximum.	Nickel.
2330	0.25-0.35	0.50-0.80	0.040	0.045	3.25-3.75
2335	0.30-0.40	0.50-0.80	0.040	0.045	3.25-3.75

NICKEL-CHROMIUM STEELS.

No.	Carbon.	Manganese.	Phosphorus, maximum.	Sulphur, maximum.	Nickel.	Chromium.
3130	0.25-0.35	0.50-0.80	0.040	0.045	1.00-1.50	0.45-0.75
3135	0.30-0.40	0.50-0.80	0.040	0.045	1.00-1.50	0.45-0.75
3140	0.35-0.45	0.50-0.80	0.040	0.045	1.00-1.50	0.45-0.75
3230	0.25-0.35	0.30-0.60	0.040	0.045	1.50-2.00	0.90-1.25
3240	0.35-0.45	0.30-0.60	0.040	0.045	1.50-2.00	0.90-1.25

CHROMIUM-VANADIUM STEELS.

No.	Carbon.	Manganese.	Phosphorus, maximum.	Sulphur, maximum.	Vanadium Chromium minimum.
6130	0.25-0.35	0.50-0.80	0.040	0.045	0.80-1.10 0.15
6140	0.35-0.45	0.50-0.80	0.040	0.045	0.80-1.10 0.15

The extreme fibre stress shall be calculated from the following formula:

$$S = \frac{32 W D}{\pi (D^4 - d^4)}$$

Where S = extreme fibre stress.
 W = the load.
 l = distance from support to load.
 D = outside diameter of tube.
 d = inside diameter of tube.

ordinarily keen eyesight, are of small stature, and are very daring. They will complete their training in France. They wear khaki uniform, much the same in cut as that worn by the British troops.

PERSONALS

Casualties.

Lieut. FRANK ALLYN BENITZ, R.A.F., who was killed in action on August 5th, aged 25, was the second son of the late Wm. O. Benitz and Mrs. Benitz, Estancia "La California," Santa Fé, Argentine.

Lieut. JAMES JEFFERY DAWE, R.A.F., who was reported missing on June 7th, and now believed killed on that date, aged 19, was the only son of Sydney and Emily A. Dawe, Ashlyns, Rickmansworth.

Lieut. ROY JAMES FITZGERALD, M.C., Glouc. Regt., attached R.A.F., who was killed while acting as observer at the front on July 1st, was the son of the late William Crowthers FitzGerald, of Wellington, New Zealand. He enlisted in the Gloucester Regiment in September, 1914, and very shortly afterwards received his commission, proceeding to the front with the regiment in 1915. He twice led companies in successful assaults, being awarded the M.C. for gallantry and leadership. During an attack in May, 1917, he was wounded, and captured by the Germans while insensible and after five months in hospital and a prisoners' camp in Germany he, together with another officer, escaped, and after several adventures reached Holland on October 8th. On arrival in England, he was sent for by the King, who invested him with the M.C. won in the previous year. Although granted three months' leave, he gave up two months of this in order to rejoin his regiment on another front, where he again distinguished himself, and was recommended for a Bar to his Military Cross. In the spring of this year he joined the R.A.F. and was killed while acting as observer, having volunteered for a dangerous task. He was married in 1916, and leaves a widow.

Lieut. WILLIAM SCOTT ROBERTSON, R.A.F., who has been killed in action, aged 20, was the son of Mr. William Robertson, editor of the *North-Eastern Daily Gazette*, Middlesbrough. Lieut. Robertson was educated at the Middlesbrough High School, and later was a student in naval architecture at the Armstrong College, Newcastle.

Lieut. PHILIP JAMES STUART-SMITH, Lord Strathcona's Horse, attached R.A.F., who was previously reported missing, and now reported by the German Government killed, or died of wounds, was the elder son of James and Mrs. Stuart-Smith, and husband of Claire Stuart-Smith.

Lieut.-Col. JOHN HENRY MORRIS ARDEN, D.S.O., Worcester Regiment, who died at Cairo on July 23rd, was born in 1875, and was the son of the late Rev. A. H. Arden. He was educated at Malvern College, entered the Army in 1897, and became captain in 1900. He joined the Egyptian Army, from which he retired after a distinguished career in 1912. He obtained the brevet of major in 1915, and was promoted lieutenant-colonel in 1916. He served in the South African war, 1899-1902 (Queen's Medal, with three clasps, and King's Medal, with two clasps), and the Sudan in 1912 (medal and clasp, and 2nd Class Osmanieh). At the outbreak of the present war he rejoined the Worcestershire Regiment as captain. He was twice mentioned in despatches, and held the 1914 Star. He won his D.S.O. at Neuve Chapelle in March, 1916. He was badly wounded in July, 1915, and again on July 1st, 1916, when in command of the Northumberland Fusiliers. After his recovery he was given a Staff appointment and was made commandant of an R.F.C. Cadet Wing. Having been asked to undertake an important work of military organisation in the Near East, he is now reported to have died at Cairo shortly after his arrival in Egypt.

Lieut. ARTHUR WILMOT CARR, R.A.F., who was drowned while bathing at Aboukir on July 6th aged 35, was the eldest son of the late Rev. Henry Bryan Carr, of St. John's College, Cambridge. Educated at Westminster City School, he offered himself for service at the outbreak of war in August, 1914, and obtained a commission in the Royal Irish Fusiliers in 1915.

Sec. Lieut. MOWBRAY NOURSE CLOETE, R.A.F., who was accidentally killed while flying on August 6th, aged 18,

was the only son of the late Mr. and Mrs. Sebastian Cloete, of Rhodesia, South Africa.

Capt. THOMAS COLVILL-JONES, R.A.F., who died on May 24th at Limberg, Germany, was the second son of Mr. and Mrs. R. Colvill-Jones, of Buenos Aires, Argentina.

Flight-Cadet OSCAR FISHER, R.A.F., previously 5th Seaforth Highlanders, who was killed on July 30th, while flying, was the fourth son of Mr. and Mrs. T. E. Fisher, of Grimsby.

Major CYRIL E. FOGGIN, R.A.F., who is reported to have been killed while on service in France, in a motor-car accident, was the son of Mr. and Mrs. W. S. Fogglin, Richmond Villas, Gosforth, Newcastle.

Sec. Lieut. DOUGLAS MACKENZIE, R.A.F., who died on August 4th, as the result of an accident while flying, aged 24, was the only child of the Rev. Dr. and Mrs. Mackenzie, of Honan, North China, and Toronto, Canada, and nephew of Lieut.-Col. W. Grant Morden, of Heatherden Hall, Iver Heath, Bucks.

Lieut. H. S. RICHARDS, Essex Regiment, attached R.A.F., who was accidentally killed while flying in England, was the 1914 Rhodes Scholar (New Zealand University). He was educated at the Rangiora High School and Canterbury University College, where he had a distinguished career, taking his M.A. degree with double-first class honours in mathematics, the senior scholarship in mathematics, and the Cook memorial mathematical prize. He represented his college at the University tournaments in 1913-14-15. After entering Balliol in 1915, he was commissioned to the Essex Regiment, with which he served during the Somme battle until wounded in the attack upon Thiepval in September, 1916. On being discharged from hospital at the end of 1917 he transferred to the R.A.F., and was instructing as a pilot at the time of his death. He is the third New Zealand Rhodes Scholar to fall in this war.

Sec. Lieut. ALLAN GIBBS RIDOUT, who was killed on July 28th, aged 19, while flying in England, was the second son of Mr. A. W. Ridout, of Regina, Sask., Canada, and a great-grandson of the late Capt. William Swabey, R.H.A., who fought in the Peninsular Campaign and at Waterloo. He was born in Eastern Canada, but received the greater part of his school training in the great Canadian West. He had just completed his course in the High School at Regina, which prepared him for a university career, when he decided to enlist as a cadet in the R.A.F. He joined the Air Force in October, 1917, and entered the large training camp for Cadets near Toronto, Ontario. He passed successfully through all the training schools of the Air Force in Canada, and eventually became a pilot. Later he came to England as a commissioned officer, and soon became a successful pilot here. Throughout his career he had never broken a machine before his first crash, which ended in his death.

Lieut. PETER WOLFERSTAN RYLANDS, Instructor R.A.F., who was killed while flying on August 9th, aged 19, was the eldest son of T. Kirkland and Bertha N. W. Rylands, of The Down House, Tockington, near Bristol.

Lieut.-Col. SPARKS, R.A.F., who was killed in an aviation accident, was the eldest son of Mr. George Austen Sparks, of Streatham, and grandson of Mr. Josiah Knights, timber merchant, London. Before he became an aviator, Colonel Sparks had a career of world-wide adventure, and was engaged in ranching in the Argentine. His early boyhood was spent in Glasgow with his aunt, Mrs. Dalglish Porter, founder of the Lorne Registry. He was not only an intrepid airman, but was an authority on the science of aeronautics. Lieut.-Col. Sparks leaves a widow and an infant son. His brother, Commander J. B. A. Sparks, R.A.F., returned from France on special leave to attend the funeral.

Capt. JOHN CHAMPAIN TANNER, R.A.F., who was killed on August 1st in an aeroplane accident while instructing, was the eldest son of the Rev. Maurice and Mrs. Tanner, of Eversley Rectory, Hants, and was born at Cheltenham

on July 2nd, 1897. He was educated at Cheltenham (Junior School) and at Marlborough, and received his commission in the R.N.A.S. on February 14th, 1916, at the age of 18. He was severely wounded near Arras in July, 1917, and again accidentally wounded in May, 1918.

Lieut. W. A. YEULETT, whose body has been recovered from the sea, and landed at Aargab, was the only son of Mr. and Mrs. Yeulett, of Walton-on-Thames. He was reported missing after the successful raid on the German airship sheds at Tondern on July 19th, and was 19 years of age. For the past four months he had been piloting seaplanes in the North Sea. On the occasion of his death the seaplanes reached their objectives, and carried out a most successful raid, but on the homeward journey exceedingly furious winds were encountered, the machines were parted, and one piloted by Lieut. Yeulett did not return to the ship.

Married.

Capt. LOVELL DICKENS BAKER, B.A. Oxon., Royal Dublin Fusiliers, attached R.A.F., elder son of Mr. and Mrs. John Ridley Baker, of San Francisco, was married on August 3rd in London, to RENÉE MADELEINE BROCVIELLE, youngest daughter of M. et Mme. Camille Brocvielle, of Amiens.

Lieut. HUGO J. BUCHANAN-WOLLASTON, Dorset Yeomanry and R.A.F., second son of S. G. Buchanan-Wollaston, of Exmouth, was married on August 14th, at St. John's Church, Southwick Crescent, W., to BERYL, Assistant Administrator, Q.M.A.A.C., elder daughter of the late R. B. WRIGHTSON, M.D., and Mrs. WRIGHTSON, of Aldeburgh, Suffolk.

Capt. PHILIP CUMMINGS, D.F.C., Seaforth Highlanders and R.A.F., son of the late Mr. Cummings and Mrs. Cummings, of "Little Orchard," Amersham, was married on August 6th at All Saints' Church, N.W., to KATHLEEN MARIE, elder daughter of Mr. W. J. TREMELLEN and Mrs. TREMELLEN, of Hampstead, N.W.

Lieut. GEORGE BASIL FIELDING, R.A.F., was married on August 10th at St. Andrew's, Ashley Place, London, to ESMÉ, youngest daughter of the late Mr. and Mrs. OUTRAM KELLIE McCALLUM.

Lieut. CHARLES LEONARD MATSON, M.C., Lancashire Fusiliers and R.A.F., eldest son of the late Rev. Leonard

Matson, M.A., and of Mrs. A. C. Holthouse, was married on August 7th at South Benfleet, Essex, to KATHERINE AGNES, only child of CHARLES JULIAN HOLTHOUSE and Mrs. HOLTHOUSE, of South Benfleet.

Capt. CHARLES E. WARD, R.A.F., son of E. A. Ward, of Watford, was married on August 7th, at St. Paul's, Knightsbridge, to IRENE MURIEL CONSTANCE, eldest daughter of C. V. YOUNG, solicitor.

To be Married.

The engagement is announced of Lieut. GEORGE DIETRICH, R.A.F., of 23, Grosvenor Road, Southall, to Miss DOROTHY CUTLAND, of Lady Margaret's Road, Southall.

The marriage of Capt. T. M. B. NEWTON, Royal Berks Regiment and R.A.F., to EDITH MARJORIE FOLKARD will take place at St. Andrew's, Farnham, Surrey, on September 4th, at 2.

The engagement is announced between LESLIE C. POCKNEY, R.F.A. and R.A.F., eldest son of the Rev. and Mrs. C. Pockney, of Moseley, Birmingham, and JANET O. (TINY), youngest daughter of the late Dr. T. J. PRESTON, R.N., and Mrs. PRESTON, 16, St. John's Park, Blackheath.

A marriage has been arranged and will take place shortly between Lieut. DUDLEY W. STUART, R.A.F., and EIRÈNE, youngest daughter of the Rev. W. WALKER, Rector of Pattiswick, Braintree, Essex.

Items.

Major and Lady ETHEL BAIRD have left London for Urie, Stonehaven.

The German-controlled *Gazette des Ardennes* reports that Lieut. M. J. SAUNDERS, R.A.F., and Sub-Lieut. H. L. CROSS, R.A.F., were shot down on July 6th and July 20th respectively. The former is stated to be wounded and the latter unhurt.

Southwold Town Council has decided to confer the freedom of the borough upon Capt. HENRY WINSLOW WOOLLETT, in recognition of his conspicuous services in the Air Force, he having been awarded the D.S.O., the M.C., and bar to M.C.

The will of the late Capt. ALEXANDER GUTHRIE DEUCHAR, R.F.C., of Overdale, Newcastle-on-Tyne, who died from the result of an aeroplane accident on November 22nd, has been proved at £7,852.

man desiring to be trained under the scheme should apply to his local War Pensions Committee.

The German Five-Engined Bomber.

A GIANT German bombing plane was brought down on the night of August 10th, to the applause of a number of Americans thrilled by the sight, says the *Times* correspondent on the American front. The machine was found to contain the bodies of seven Germans, while it was propelled by five six-cylindrical engines. Two bombs had failed to explode in the fall, but ignition set one alight, and it quickly exploded, making a suitable hole for the burial of the Germans.

Aeroplane Accidents.

Two fatal accidents which occurred in an Eastern county last week again emphasise the need for keeping well clear of the ground from which aeroplanes are rising. In one case one woman was killed, another died from her injuries, and five more were seriously injured, by an aeroplane which had difficulty in rising and failed to clear them.

In the second case, one aeroplane came down and a second landed to give assistance. Getting away again, the latter in clearing a hedge killed a young soldier, and also the pony he was riding.

Shifting Factories from Rhine Provinces.

FROM a Swiss correspondent the *Messaggero* learns that the British air raids into Germany have reduced almost to ruins many of the munition factories in Baden, Wurtemberg, and Westphalia, and the production of war material in these districts has been enormously reduced. The Germans are now seeking to establish new factories in provinces further away from the front.

A Quick Change.

"AN enemy aeroplane yesterday flew over Valona, the first to come for some time, but it was brought down by two Italian chasers," says Mr. J. M. N. Jeffries in a despatch to the *Daily Mail* from that place on August 2nd. "The pilot of one of these was bathing in the sea when the Austrian was sighted. He swam ashore fast, put on pyjamas over his bathing things, and thus strangely dressed helped to bring down the enemy at a point 30 miles from here. The Austrian pilot was gravely wounded. His seaplane was a 300-h.p. Kappa, and carried two guns."

The Scientific Products Exhibition.

AVIATION is well represented at the Scientific Products Exhibition, opened at King's College, on Wednesday. The displays include those devoted to wood-seasoning, the Calthrop parachute, aeroplane magnetos, cellulose acetate and dope, and many others illustrating the progress and development of aeronautics. The Air Ministry have lent their valuable assistance, and the collection of models is a most interesting and instructive one.

A Canadian Air Service.

QUICKLY following the statement of Brig.-Gen. Hoare, commanding the R.A.F. in Canada that he believed a Canadian Flying Corps would be established, came an announcement by the Department of Naval Service at Ottawa of the immediate organisation of a Royal Canadian Air Service, having for its primary object the defence of Canada's coasts, but men enlisting will be liable to service outside the Dominion if this should be necessary.

Famous French Pilot Killed.

LIEUT. GABRIEL GUERIN, one of the best-known French aces, with 23 German machines to his credit, was killed in an aeroplane accident last week. Lieut. Guerin had been mentioned on 12 occasions, and had received the Military Medal and the Legion of Honour.

Rouen and Havre Bombed.

ENEMY aeroplanes attacked Rouen and Havre on the night of July 31st. One person was killed and four were slightly injured in the Havre district. There were no casualties at Rouen.

State-Aided Training for Disabled Men.

PREPARATIONS for training disabled men in aircraft manufacture, general engineering and electrical engineering are being completed by the Pensions Ministry with the help of advisory committees representing the employers and the trade unions. The training for a skilled workman is three years, and during the first 18 months the man is to be partly maintained by the State.

The scheme provides for payment of men at the rate of 27s. 6d. weekly during the first six months, 35s. 6d. in the second six months, 42s. 6d. in the third, 52s. 6d. in the fourth, and 57s. 6d. in the fifth and sixth half years. Any disabled

THE ROYAL AIR FORCE

London Gazette, Aug. 6th.

Staff Officer, 2nd Class.—Capt. Hon. G. St. J. Broderick, M.C., and to be Temp. Maj. while so employed, vice Capt. (Temp. Maj.) W. W. Tullis; Aug. 4th.

The following temporary appointments are made:—

Staff Officers, 1st Class.—And to be Temp. Lieut.-Cols. while so employed, if not already holding that rank:—H. M. M. Robertson, M.C. (Maj., R.A.), and is granted a temp. commission as Maj.; April 1st. M. A. C. Winter; April 10th. (Substituted for notification in *Gazette*, May 1st.) Lieut.-Col. E. B. Gordon, D.S.O.; June 15th. Lieut.-Col. R. C. Davidson-Hudson, D.S.O.; June 20th.

Staff Officers, 2nd Class.—Capt. (Temp. Maj.) J. W. Burt, Lieut. (Temp. Capt.) F. G. Stammers, and to be Temp. Maj. while so employed, Capt. (Temp. Maj.) W. G. P. Young; June 15th. Capt. (Temp. Maj.) C. S. Macnab; March 30th. Maj. J. W. K. Allsop relinquishes his appointment as Staff Officer, 2nd Cl.; July 17th.

The date of appointment of the following officers, notified in *Gazette* July 2nd, is April 1st:—Maj. H. A. R. Aubrey, M.C., Lieut. (Temp. Maj.) R. Addenbrooke-Prout, M.C., Capt. (Temp. Maj.) C. C. Boyd-Rochfort, Capt. (Temp. Maj.) A. J. Child, M.C., Lieut. (Temp. Maj.) T. M. Eggar, Capt. (Temp. Maj.) F. C. Fulton, Capt. (Temp. Maj.) C. F. Gordon, M.C., Lieut. (Temp. Maj.) F. S. Isaac, Capt. (Temp. Maj.) G. C. May.

Staff Officers, 3rd Class.—And to be Temp. Capt. while so employed, if not already holding that rank:—Lieut. P. H. Morrissey; April 1st. Lieut. V. Stranders; April 24th. Capt. T. B. Marson, vice Lieut. (Temp. Capt.) F. G. Stammers; June 15th. Lieut. P. A. Simmons; June 18th. Capt. R. Bell-Bivar; June 20th.

The date of appointment of the following officers, notified in *Gazette* July 2nd, is April 1st:—Capt. C. G. Beatson, Capt. W. S. Evans, Capt. W. J. J. E. M. Everard, Lieut. (Temp. Capt.) S. D. Felkin, Capt. J. G. Howell, M.C., Lieut. (Temp. Capt.) P. C. Hoyland, Capt. J. Selwyn, Lieut. (Temp. Capt.) F. G. Stammers, Capt. G. T. Tait, Lieut. (Temp. Capt.) J. S. Webb, Capt. R. Whittaker.

Flying Branch.

The following Capt. (Temp. Maj.)s. to be Temp. Lieut.-Cols. while employed as Lieut.-Cols. (A. and S.):—S. H. B. Harris; April 1st. G. L. Thomson, D.S.C., D.F.C.; July 27th.

Maj. R. S. Robinson to be Temp. Lieut.-Col. while employed as Lieut.-Col. (Dir.); Aug. 1st.

Capt. (Temp. Maj.) R. J. J. Hope-Vere to be Temp. Lieut.-Col. while employed as Lieut.-Col. (S.); July 26th.

Capt. C. C. Durston to be Temp. Maj. while employed as Maj. (A. and S.); July 27th.

Maj. J. P. Wilson, D.S.C., to be Maj. (A. and S.) from (Ad.); July 29th.

Lieuts. to be Temp. Capt. while employed as Capt. (A.):—F. G. Powell; July 17th. C. L. King; July 22nd. C. L. Baldwin, C. McMillan, M.C., F. J. Tanner; July 23rd. E. N. Griffith, H. G. Jackson, J. P. Seabrook; Aug. 1st. J. E. Phillip, J. McDi. Walker, J. R. Webb; Aug. 2nd.

Lieuts. to be Temp. Capt. while employed as Capt. (A. and S.):—H. M. Coombs, W. A. Rochelle; July 4th. H. J. Burden; July 9th. M. C. McGregor; July 22nd. A. H. Flower, W. K. Mercer; July 24th. L. R. Charron; July 26th.

Lieut. (Temp. Capt.) H. D. Williams retains his temp. rank while employed as Capt. (A. and S.) from (S.O.); Aug. 1st.

Lieut. G. O. Lightbourn to be Temp. Capt. while employed as Capt. (K.B.); July 9th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A.):—P. V. Birchard, C. G. Ellis, J. M. Loggie, A. M. Smith, C. C. Tait; June 3rd. A. W. Allis, M. E. Atkey, C. F. Barton, A. Bentley, H. T. B. Bentley, J. H. Blackey, H. A. Bradshaw, R. E. Brown, O. W. E. Crawford, W. F. Caldwell, F. J. Currier, R. R. Drysdale, J. O. Dufort, H. E. Fisher, S. J. Graham, F. S. Gregson, W. J. Hatrick, K. F. Hawley, H. Hollick-Kenyon, H. J. Keddy, J. R. Kennedy, L. W. Kidd, H. D. Lawson, H. L. Lobb, J. A. MacKay, C. McG., Martin, W. H. McCann, L. D. McCarthy, D. H. McGibbon, D. A. McIntyre, R. H. McKee, G. E. McLeod, O. J. McNally, H. R. Messenger, B. G. Morgan, R. Morrison, E. J. Murray, W. B. Penney, C. A. Pieper, B. H. Redner, C. G. Rich, T. F. Sanderson, J. S. Selak, C. S. Smith, G. R. Spradbrow, R. C. Styles, P. A. Timmons, H. Pinkerton; June 6th. W. H. Moore; June 7th. C. R. Abell, E. C. Bigelow, P. H. Carson, T. H. Catter, H. Coyle, R. P. D'Alton, T. A. Duval, H. Egan, S. C. Elliot, W. Edwards, H. W. Gill, D. E. Gray, W. J. Griffith, M. F. Hall, A. W. Hofmeister, C. D. Lang, J. G. Lethbridge, J. B. Little, J. L. Machon, D. G. MacSwiney, C. C. Marshall, I. M. Martin, K. P. McGowan, A. S. McGrath, G. C. Mitchell, F. C. Murray, H. A. Neate, C. Nickle, W. T. Parker, W. Pendleton, F. C. Pepino, R. I. Quigg, J. W. Ross, W. R. Sisson, T. A. Smith, W. R. Young, W. H. Lange, W. Murphy, E. W. Williams; June 13th. G. E. De Siena; June 15th. H. C. Anderson, W. C. Angus, C. H. Alford, C. E. Belanger, D. A. Black, R. S. Bowen, H. C. Brown, C. P. Buker, R. H. Bullock, R. B. Butler, L. S. Campbell, J. E. Charlebois, L. F. Chisenhall, R. E. Clifford, W. H. Corsan, A. Crookard, J. W. Dempsey, A. W. Field, H. C. Fox, F. Garnett, W. H. Herold, E. L. Humphreys, J. R. Johnson, W. P. Loomis, J. W. Lyrell, F. A. Maples, G. M. Marshall, N. T. May, C. W. Meyers, J. A. Murray, H. N. Nelson, T. Nibset, E. J. Parker, H. H. Pheeny, W. Shorrocks, R. P. Stockton, H. R. Smith, G. H. Swan, W. L. Taylor, H. R. Waddell, T. L. Watson, N. A. D. Cowan, M. Crawford; June 20th. G. Abrahams, B. E. Bayne, L. Bennett, V. A. Braban, E. Brandt, F. Charlesworth, G. L. Coffing, F. L. J. Cook, W. E. Cook, D. M. Crater, H. G. Darroch, G. E. Driscoll, E. L. Fitzsimmons, A. W. Forsyth, H. E. Givan, J. E. Gondey, C. G. Grant, F. S. Griffith, J. C. Hamilton, R. E. Heartz, A. W. Hill, F. K. Hope, S. A. Jeffery, P. B. Keffler, C. W. King, H. Lackey, E. R. Livingston, W. C. Louttit, E. G. MacKay, S. A. Marden, W. T. Martin, W. H. McDardell, W. G. McGruther, J. B. McIntosh, E. L. Morley, St. C. M. O'Connor, E. S. Rippon, D. S. Robertson, R. M. Smith, W. P. Small, A. H. Smith, A. Smedley, J. D. Stephen, E. A. Thomas, P. H. Wade, H. T. Watts, W. H. Williams; June 27th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A. and S.):—L. F. Henry; June 10th. J. A. Sweetlove, W. E. Dipple; June 11th. J. Brown, H. C. Comben, H. Noble, V. A. J. Wagstaff, J. E. Wooding; July 9th. E. V. Evans, W. J. Gibson; July 13th. C. A. Matthews; July 14th. H. L. Miller, H. B. Mills; July 18th. R. B. Mumford; July 19th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. commissions as Sec. Lieuts. (A. and S.):—A. H. Matthews; May 15th. R. A. H. Shelford; July 19th.

V. A. Leppan (late Lieut., S.A. Forces) is granted a temp. commission as Sec. Lieut., and to be Hon. Lieut. (A. and S.); Aug. 1st.

J. M. Heathcote is granted a temp. commission as Sec. Lieut. (A. and S.); Aug. 6th.

H. B. King (late Lieut., S.A. Forces) is granted a temp. commission as Sec. Lieut. (Dir.), and to be Hon. Lieut.; Aug. 1st.

Sec. Lieut. J. A. Hannigan (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (K.B.); July 10th.

The following are granted temp. commissions as Sec. Lieuts. (K.B.):—C. J.

Dowson (Lieut., Essex R., Spec. Res.), and to be Hon. Lieut., R. L. R. Gale (Temp. Lieut., R.W. Kent R.), and to be Hon. Lieut., P. M. Lindesay (Lieut., R. Innis, Fus., Spec. Res.), and to be Hon. Lieut., S. T. Lowe (Lieut., Manch. R., T.F.), and to be Hon. Lieut., A. B. Taylor (Lieut., R.F.A., T.F.), and to be Hon. Lieut., J. Tocher (Lieut., Cam'n Highrs., T.F.), and to be Hon. Lieut., A. D. Drew (Lieut., Lan. Fus., Spec. Res.), and to be Hon. Lieut., W. Hopps (Temp. Sec. Lieut. attd. Rif. Brig.), T. G. Murray (Temp. Sec. Lieut., E. Kent R.), G. W. M. Paterson (Sec. Lieut., R. Scots, T.F.), G. H. Powe (Sec. Lieut., Notts and Derby R., T.F.); July 10th. H. S. Laing (Sec. Lieut., R.G.A., Sec. Res.); July 20th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (Observer Officers):—F. W. T. Ross; July 22nd. W. Alexander, W. H. Abraham, A. R. Courtis, J. P. Elliott, R. T. Gray, G. E. Hughes, H. B. Hubbard, R. A. Higgins, A. Hawthorn, F. R. Jennings, H. J. Loverseed, A. Maybaum, E. R. Petts, J. S. K. Warren; July 25th. H. R. Murray, G. Gedige; July 26th. J. R. Lofthouse, F. Caton; July 27th. J. R. Hill, A. C. Eaton, R. E. Hardwidge, W. Nutter, F. S. Towler, F. O. Cook, H. W. Derbyshire; July 31st. S. A. Barnes, J. W. Longland, J. J. Phillips, J. Boughy, J. A. Simson, H. Holmes, C. J. Locke, R. S. Oakley, G. A. May, R. M. E. Allen, A. C. Bailey, G. Boys, A. D. Cherry, J. G. Clayton, S. Coates, R. Franklin, J. V. Gardener, V. R. Homersham, P. J. C. Johnson, J. A. W. Jarvis, G. Kannemeyer, S. Kennan, W. Milburn, D. McArthur, A. B. Poel, A. F. Perry, W. T. Richards, W. G. Robinson, M. Wynn-Parry, G. Wilton; Aug. 3rd. J. W. Hicks, E. A. Marchant; Aug. 4th.

The following relinquish their commissions on ceasing to be employed:—Lieut. W. F. Steedman, M.C. (Sec. Lieut., S.A. Infy.); June 25th. Lieut. G. Milner (Lieut., R.E., Spec. Res.); July 26th. Capt. R. R. Orr-Paterson; Aug. 1st.

Lieut. F. E. Davis relinquishes his commission on account of ill-health, and is granted the hon. rank of Lieut.; Aug. 7th.

The following Lieuts. resign their commissions:—J. O. Moss, L. H. Patterson; Aug. 7th.

Sec. Lieut. G. Fineran relinquishes his commission on account of ill-health, and is granted the hon. rank of Sec. Lieut.; Aug. 7th.

The following Sec. Lieuts. relinquish their commissions, having been found permanently unfit for further instruction as Pilots or Observers:—J. F. Shaw, R. Allison, W. G. Ewins, C. T. Chisnell, J. M. Wallace, W. R. Brown, T. T. Scollick, J. C. Dempster; Aug. 7th.

The date of appointment of Capt. E. R. Vaisey as Temp. Maj. is Aug. 2nd, and not as stated in *Gazette* July 16th.

The notification in *Gazette* May 21st regarding Sec. Lieut. F. A. Black is cancelled.

The notification in *Gazette* May 28th regarding Sec. Lieut. R. A. Arnott is cancelled.

The notifications in *Gazette* June 4th regarding the following officers are cancelled:—Sec. Lieut. (Hon. Lieut.) E. L. O'Leary, Sec. Lieut. (Hon. Lieut.) T. J. Molony, Sec. Lieut. (Hon. Lieut.) A. Lomax, Sec. Lieut. (Hon. Lieut.) T. B. M. Brown, Sec. Lieut. W. A. B. Buscarter.

The surname of Sec. Lieut. J. R. W. Adamson is as now described, and not as in *Gazette* July 16th.

The notification in *Gazette* July 23rd concerning Lieut. (Temp. Capt.) G. O. Lighthouse is cancelled.

Administrative Branch.

Maj. L. Greig, M.V.O., to be Maj., from (M.); Aug. 1st.

A. B. Ennis (Maj., Res. of Offrs.) is granted a temp. commission as Capt. and to be Hon. Maj.; June 29th.

Capt. R. Oxspring, M.C., to be Capt., from (A. and S.); July 15th.

Lieuts. to be Temp. Capt. while employed as Capt. (A.):—W. E. Berwick; April 1st. R. J. H. F. Beresford; July 25th.

The following are granted temp. commissions as Lieuts.:—E. Pope (Lieut., Spec. Res.); July 18th. A. Keiller; July 29th.

Lieut. (Temp. Capt.) H. Parker-Jervis relinquishes his temp. rank on reverting to Lieut.; July 25th.

Sec. Lieuts. to be Temp. Lieuts. while employed as Lieuts.:—L. J. Grant; April 1st. P. Maggs; July 23rd.

Lieuts. (O.) to be Lieuts.:—A. A. Watson; July 15th. J. W. C. Dick; Aug. 5th. Lieut. R. E. Meek to be Lieut. from (A. and S.); July 16th. Lieut. H. M. Taylor to be Lieut. from (K.B.); July 26th.

The following are granted temp. commissions as Sec. Lieuts.:—C. E. Beeson; July 13th. L. Glasspole; Aug. 1st. C. A. Wilmot; Aug. 3rd.

Capt. (Temp. Maj.) A. F. Oxborough is removed from the R.A.F. on being convicted by Naval Court-martial; June 14th.

Sec. Lieut. G. N. Wood relinquishes his commission on account of ill-health, and is granted the hon. rank of Sec. Lieut.; Aug. 7th.

The notification in *Gazette* June 7th, concerning Lieut. (Temp. Capt.) S. T. Grant, is cancelled.

The initials of Lieut. (Temp. Capt.) J. P. Ross are as now described, and not as in *Gazette* June 18th.

The notification in *Gazette* June 28th, concerning Sec. Lieut. F. H. Barratt, is cancelled.

Technical Branch.

R. A. F. Kingscote (Temp. Lieut.-Col., R.E.) is granted a temp. commission as Lieut.-Col.; May 1st.

The following are granted temp. commissions as Maj. (Bt. Lieut.-Col., R.E.), A. Struben (late Maj., Gen. List; May 1st. Lieut. (Temp. Capt.) H. W. Mills to be Temp. Maj. while employed as Maj.; July 23rd. Capt. (Temp. Maj.) T. F. G. Strubell retains his temp. rank while employed as Maj., from (S.O.); July 26th.

The following Temp. Capt. (R.E.), are granted temp. commissions as Capt. (A.):—W. A. Daft, H. T. Dumfries, J. F. Hawkins, A. M. Taylor, G. Waddell, and to be Temp. Maj. while so employed; May 1st.

G. C. Milnes, M.C. (Capt., York and Lanc. R.) is granted a temp. commission as Capt.; May 1st.

The following Temp. Lieuts., R.E., are granted temp. commissions as Lieuts.:—J. G. N. Clift, H. Hooper, J. A. V. Welsh; May 1st.

Lieuts. (A. and S.) to be Sec. Lieuts., and to be Hon. Lieuts.:—W. F. E. MacLaren, A. V. Jones, E. D. Inskip; June 15th.

Sec. Lieuts. (late Gen. List) R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts.:—E. Whitmore; May 2nd. C. R. Brown, R. H. Nicol; May 3rd.

Sec. Lieuts. (Admin.) to be Sec. Lieuts.:—R. Guy; April 17th. A. J. Maguire; June 1st. R. O. Vasey, R. S. Dias; June 2nd. H. W. Richardson; July 1st. W. T. Bodger; July 3rd. C. E. English, F. Calnan, J. W. Brittain, T. C. Balfour; July 5th. A. A. Pollitt; July 6th. R. G. Sims, J. A. Tindall, G. T. Kitto, H. V. Stainer; July 7th.

The following are granted temp. commissions as Sec. Lieuts.:—W. B. Close (Temp. Sec. Lieut., R.E.); May 1st. C. L. Gandy (Lieut., R.D.C., T.F.), and to be Hon. Lieut.; May 3rd. R. D. Fleet (Sec. Lieut., R.G.A., Spec. Res.),

W. E. Westwood (Temp. Sec. Lieut., Labour Corps), G. McDonald (Lieut., Gord. Highrs., T.F.), and to be Hon. Lieut., F. J. Lyons-Davies (Sec. Lieut., R.E., T.F.), S. H. Pestell (Sec. Lieut., Lond. R., T.F.); June 1st. E. H. Edleston (Lieut., R.F.A., T.F.), and to be Hon. Lieut., A. B. Fortt (Temp. Sec. Lieut., Labour Corps); June 2nd. J. T. M. Hill (Lieut., Alberta R., C.E.F.), and to be Hon. Lieut.; June 15th.

Capt. E. I. Bingham relinquishes his commission on account of ill-health, and is granted the hon. rank of Capt.; Aug. 7th.

Sec. Lieut. E. W. Braendle relinquishes his commission on account of ill-health, contracted on active service, and is granted the hon. rank of Sec. Lieut.; Aug. 7th.

Sec. Lieut. R. T. Belville resigns his commission; Aug. 7th.

Medical Branch.

G. W. J. Bousfield is granted a temp. commission as Lieut.; Aug. 5th.

Memorandum.

Lieut. A. H. A. Gem, M.C., to be Temp. Capt. while employed as Area Suptd. of Gymnastic Staff; June 4th.

London Gazette, August 9th.

The following temporary appointments are made at the Air Ministry:—
Staff Officers, 2nd Class.—And to be Temp. Maj. while so employed:—M. H. Davies, M.C. (Temp. Capt., Gen. List), and is granted a temp. commn. as Capt., vice Capt. (Temp. Maj.) G. S. Trewin; July 8th. Lieut. (Temp. Capt.) W. Hodgson, vice Maj. J. G. Currie; July 16th.
Staff Officer, 3rd Class.—Lieut. E. B. Barker, and to be Temp. Capt. while so employed; July 10th.

The following temporary appointments are made:—
Staff Officer, 1st Class.—Maj. F. H. Unwin, and to be Temp. Lieut.-Col. while so employed; June 24th.

Staff Officers, 2nd Class.—The Hon. V. A. F. V. Russell (Lieut.-Col., Bed. R. (T.F.)), and is granted a temp. commn. as Maj. and to be Hon. Lieut.-Col.; J. E. Hume (Maj., Conn. Rang.), and is granted a temp. commn. as Maj.; June 27th.

Flying Branch.

Lieut. (Temp. Capt.) L. A. Hervey to be Temp. Maj. while employed as Maj. (A); July 24th.

Capt. H. J. T. Berryman to be Temp. Maj. while employed as Maj. (A. and S.); July 25th.

Lieutenants to be Temporary Captains while employed as Captains (A):—F. H. Creasy; June 16th. A. W. Saunders; July 20th. (Hon. Capt.) R. S. Daly, D.S.C.; July 30th. J. Austin-Sparks, G. T. Richardson, C. H. Smith; Aug. 3rd. W. S. Lawson; Aug. 4th.

Lieutenants to be Temporary Captains while employed as Captains (A. and S.):—(Hon. Capt.) C. R. Rischbieth; July 18th. (Hon. Capt.) K. G. Boyd; July 20th. G. H. Boyce, E. J. L. Hope; July 30th.

Lieut. (Hon. Capt.) R. S. Montague to be Temp. Capt. while employed as Capt. (Dir.); July 26th.

Lieut. G. H. O. Strettle to be Temp. Capt. while employed as Capt. (K.B.); July 23rd.

Lieut. (Hon. Capt.) L. L. King to be Temp. Capt. while employed as Capt. (S.); July 30th.

V. Cowper-Young is granted a temp. commn. as Hon. Lieut.; April 1st.

The following **Flight Cadets** are granted temporary commissions as **Sec. Lieutenants (A)**:—F. E. Armstrong, R. J. Acheson, F. B. Barlow, G. K. Berry, L. P. Boulder, N. C. Boyles, C. F. Breckon, W. E. Campbell, W. L. Case, S. Cranston, M. A. Dixon, H. Eckley, C. E. Evans, H. N. Eyre, F. E. Finlay, J. Gries, E. G. Hamilton, N. De W. Jones, S. H. Jacobus, A. G. Kettles, J. H. Knowles, F. W. Le Blanc, J. H. Lee, D. St. C. Leitch, G. W. Lawson, C. W. Manson, J. W. McManamy, F. C. Moore, R. K. Moore, W. Morris, C. W. Payne, G. S. J. Payne, J. Pinch, K. B. Rector, A. B. Richardson, B. H. Robert, K. Stone, C. G. Tallmadge, W. Todd, G. A. Wrigglesworth, G. T. Young; July 4th.

The following **Sec. Lieuts.** (late Gen. List, R.F.C., on prob.) are confirmed in their rank as **Sec. Lieuts. (A. and S.)**:—H. Russell; April 1st. R. Lane; April 9th. F. J. Taylor (date of commn., Feb. 21st); April 24th.

The following **probationary Flight Officers** (late R.N.A.S.) are granted temporary commissions as **Second Lieutenants (A. and S.)**:—N. Owen; May 17th. B. F. Hale; June 2nd. J. N. Laughlin; June 6th. W. A. F. Gordon, J. A. Reith, R. S. Willis, F. P. Smith, H. A. Lye; June 7th. N. A. Richardson, G. K. Waterhouse, R. S. Percival, D. J. B. Munro, M. S. Tench, G. H. Clarke, F. L. Hutchinson, L. W. Oliver; June 8th. S. M. Morris; June 10th.

The following are granted temporary commissions as **Second Lieutenants (A. and S.)**:—T. G. Bird; May 11th. J. M. Munro (late Lieut.-Engr., R.N.R.); May 24th.

The following **Flight Cadets** are granted temporary commissions as **Second Lieutenants (A. and S.)**:—F. W. Seed; July 2nd. S. K. Fey; July 26th. R. L. Henning, J. L. Pritchard; July 27th. J. A. B. Carr-Halfrey, P. J. Pitts, R. K. Harvey; July 28th.

The following **Flight Cadets** are granted temporary commissions as **Second Lieutenants (Observer Officers)**:—J. W. Perks; May 18th. H. H. Davies, P. Porteous; May 25th. L. G. Best; July 5th. J. K. Best; Aug. 5th. W. D. Evans, A. E. Turfrey, C. E. Thorpe, F. W. Aldridge, A. C. Taylor; Aug. 6th.

The following **Second Lieutenants** relinquish their commissions, having been found permanently unfit for further instruction as **Pilots or Observers**:—S. Borson, L. G. Davies, A. R. Frankish, J. R. McKew, M. J. Norton, C. G. Slater, J. D. Taylor, A. Traviss; Aug. 10th.

Notifications in *Gazette* with reference to the following **Flight Cadets** (now **Sec. Lieuts.**) are cancelled:—J. K. Best (*Gazette*, July 16th); G. H. Haslam (*Gazette*, July 16th); W. R. T. Chamberlain (*Gazette*, July 30th).

The names of the following **Cadets** should be as now described, and not as in *Gazette*, July 30th:—Thomas Leslie Heasman, Richard Emile Haestier.

The notification in *Gazette*, May 28th, regarding **Sec. Lieut. G. Swannell** is cancelled.

The notification in *Gazette*, June 14th, regarding **Sec. Lieut. H. M. S. Parson** is cancelled.

The notification in *Gazette*, July 5th, regarding **Lieut. (Temp. Capt.) F. W. Burdick** is cancelled.

Administrative Branch.

Sec. Lieut. S. G. Williams to be Temp. Capt. while employed as Capt.; July 15th.

Sec. Lieut. A. G. Chapman to be Temp. Lieut. while employed as Lieut.; June 18th.

The following are granted temporary commissions as **Lieutenants**:—C. R. Ansell (Lieut., R.W.S.R.); July 1st. H. De L. Willis (Maj., R.M.L.T., ret.), and to be Hon. Maj.; Aug. 1st. H. C. Atkinson (Dep. Commy. and Hon. Capt.), ret. pay, I.A.), and to be Hon. Capt.; Aug. 6th.

The following are granted temporary commissions as **Second Lieutenants**:—R. Breese; July 20th. H. Brighthouse, J. S. Burt, W. F. Duff, C. W. N. Fuller, J. Harland, T. A. Higgs, A. M. Hooper, H. L. Jones, G. J. Mordaunt, W. H. North, H. V. Porter, R. C. Bookless, E. H. Sherman, M.C. (Hon. Sec. Lieut., ret. list); Aug. 6th. E. Ware; Aug. 7th. D. A. Batwell, F. B. Jeffries, I. Wardle, T. Mumford (Temp. Sec. Lieut., ret. pay), and to be Hon. Lieut.; Aug. 8th.

The date of appointment to a Temp. commission as **Sec. Lieut.** of W. N. Doble is July 1st, and not as stated in *Gazette*, July 25th.

The date of appointment of **Lieut. G. W. Panter** to Temp. Maj. is April 3rd, and not as stated in *Gazette*, July 30th.

Sec. Lieut. E. Lawson is removed from the Service for absence without leave; May 1st.

Capt. C. Hunt relinquishes his commission on ceasing to be employed; Aug. 10th.

Sec. Lieut. K. E. Martienssen relinquishes his commission on account of ill-health caused by wounds contracted on active service, and is granted hon. rank of **Sec. Lieut.**; Aug. 10th.

The following **Sec. Lieuts.** relinquish their commissions on account of ill-health and are granted hon. rank of **Sec. Lieut.**:—C. B. S. Ritchie, T. H. Sharples; Aug. 10th.

Technical Branch.

Maj. F. W. Hodges to be Maj. (from Ad.); April 8th.

Capt. A. J. G. Anderson to be Temp. Maj. while employed as Maj.; July 23rd.

To be Temporary Captains while employed as Captains:—2nd Lieut. (Hon. Lieut.) T. A. Ross; June 11th. Lieut. (Hon. Capt.) R. H. Sievwright; July 18th.

Second Lieutenants to be Temporary Lieutenants while employed as Lieutenants:—(Hon. Lieut.) H. M. Fulton; May 11th. J. A. McMullen, R. A. Silk, H. H. E. Wood; July 1st. S. Mills; July 22nd.

Capt. R. Clelland reverts to Lieut. at his own request; July 22nd.

The notification in *Gazette*, June 4th, concerning **Lieut. (Hon. Capt.) H. M. Fulton** is cancelled.

Medical Branch.

W. G. Weston is granted a temp. commn. as Capt.; Aug. 1st.

The following are granted temp. commns. as **Lieuts.**:—P. A. Dormer; Aug. 6th. R. W. Stephenson; Aug. 7th.

Dental Branch.

W. C. Murray (late Dental Surg.), R.N.V.R.) is granted a temp. commn. as Capt. and to be Temp. Maj. while specially employed; July 26th.

Memoranda.

Sec. Lieut. H. C. Traver to take rank and precedence as if his appointment as **Sec. Lieut.** bore date July 2nd.

The surname of **Sec. Lieut. C. G. Abel** is as now described, and not as stated in *Gazette*, July 19th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, Aug. 5th.

Flying Officer (Observer).—Temp. Sec. Lieut. (on prob.) M. A. Hebb, Gen. List, and to be confirmed in his rank; March 1st.

Instructor in Gunnery (graded as an Equipment Officer, 1st class).—Capt. B. B. J. A. O'Donnell, M.C., R. War. R., T.F., from an Asst. Instr. in Gunnery (graded as an Equipment Officer, 2nd class); March 10th.

Equipment Officer, 3rd Class.—Temp. Sec. Lieut. J. Morris, Lab. Corps, and to be transf'd. to R.F.C. Gen. List; Jan. 5th.

General List.—The surname of Temp. Sec. Lieut. A. G. Boff is as now described, and not as in *Gazette* July 9th.

To be Temp. Sec. Lieuts.:—Hon. Capt. the Hon. G. S. C. Hill; Nov. 16th, 1917. J. W. C. L. Gordon; Feb. 2nd.

London Gazette Supplement, Aug. 6th.

Flying Officers.—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—E. C. Bridgman; Oct. 29th, 1917. H. M. S. Parsons; Feb. 5th. G. Swannell; Feb. 6th.

Equipment Officers, 3rd Class.—Temp. Lieut. R. Peel, Gen. List, from a Flying Officer; Sept. 7th, 1917. Temp. Lieut. J. J. Page, R.A., and to be transf'd. to R.F.C. Gen. List; March 25th. Temp. Sec. Lieut. (on prob.) A. A. Dolphin, Gen. List, and to be confirmed in his rank; Dec. 3rd, 1917.

General List.—To be Temp. Sec. Lieuts.:—3rd Cl. Air-Mech. J. D. Mail, from R.F.C.; Feb. 8th. L.-Cpl. D. A. Cobbald, from Yeo., T.F.; Feb. 14th. Pte. H. Cornford, from E. Kent R., T.F.; Feb. 15th. Pte. H. Russell, from Yeo., T.F.; Feb. 19th. Pte. G. F. C. Matthews, from E. Kent R.; Feb. 20th. Sergt. A. Roberts, from R.F.C.; Feb. 21st. Pte. C. Taylor, from E. Kent R., T.F.; Feb. 23rd. 2nd Cl. Air-Mech. F. J. Griffiths, from R.F.C. Pte. A. C. Lamb, from E. Kent R., T.F.; March 1st. Sergt. R. McNaughton, from R. Highrs.; March 5th. Pte. H. C. Craddock, from Yeo., T.F.; March 22nd. L.-Corpl. H. G. Keene, from Yeo., T.F.; March 27th. Corpl. A. E. V. Sadd, from Yeo., T.F.; March 31st.

London Gazette Supplement, Aug. 7th.

Flying Officer (Observer).—The appointment of Temp. Sec. Lieut. A. Leach, Br. W. Indies R., notified in *Gazette* June 12th, is antedated to Feb. 1st.

London Gazette Supplement, August 9th.

The following appointments are made:—

Flying Officers.—Lieut. M. F. L. Aymé-Aymard, R.F.A., S.R.; Feb. 27th. Temp. Sec. Lieut. J. W. C. L. Gordon, Gen. List; March 6th. Temp. Lieut. C. G. Haynes, M.C., K. R. Rif. C., and to be transferred to R.F.C. Gen. List; March 23rd. Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—G. B. Whitney; March 3rd. H. F. Guyon; March 3rd. R. L. Houlding; March 23rd. W. W. Gyles; March 29th.

Flying Officers (Observers).—Temp. Lieut. A. L. Watkins, attd. Glouc. R., and to be transf'd. to R.F.C. Gen. List; March 16th, seniority from Sept. 9th, 1917. Sec. Lieut. A. H. Waugh, R.W. Fus. (T.F.), and to be sec'd.; March 22nd, seniority from Jan. 21st.

Equipment Officers, 3rd Class.—Capt. H. J. Crabtree, Saskatchewan R., C.E.F.; Dec. 5th, 1917. Temp. Capt. L. G. Cloete, Gen. List; Feb. 18th. Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—W. H. Saunders; Dec. 1st, 1917. S. T. I. Woodyatt; Jan. 1st. The Hon. G. S. C. Hill; March 8th.



The Fate of Lieutenant Q. Roosevelt.

"THE grave of Lieut. Quentin Roosevelt has been found just outside Charmery, which was recently taken by the Americans," announces the *Paris Daily Mail*. "It lies in a field near a wood, and on a small and simple cross is the inscription in English: 'First-Lieutenant Quentin Roosevelt, buried by the Germans, July 14th, 1918.'"

Famous German Airmen Killed.

News reached Holland on Monday that Lieut. Loewenhardt, who was mentioned in Saturday's German communiqué as having brought down his fifty-second and fifty-third aerial victims, had fallen.

Flight-Lieut. Hans Pippard, for whom 21 victories are claimed, is also reported killed.

AVIATION IN PARLIAMENT.

Airship Construction (Skilled Workers).

Mr. C. DUNCAN in the House of Commons on Aug. 6th asked the Secretary to the Admiralty if large rigid airships are urgently required for His Majesty's Navy; if so, if any reason can be given why the firm that has carried out all the pioneer work in rigid airship construction and built the first successful rigid airship should now be in a position necessitating a large reduction in the number of their skilled workers, whilst other firms who had not the same experience were fully employed; whether he is aware that resentment is felt by the trade unionists of this firm who, at considerable sacrifice, have given every possible assistance in teaching the work to female labour, and now find that a large proportion of girls will shortly be without employment or put on other work where their special training will not be utilised; and if any reason can be given for the stoppage of construction of a new airship building shed for this firm on which a large sum of money has been expended?

Dr. Macnamara: The firm to which I understand my hon. friend to refer is at present building a rigid airship, but the constructional shed which they have at the present time, though big enough for the ships they are building, is not sufficiently large for future requirements. Moreover, building sheds already in existence elsewhere are sufficient to meet present requirements. As regards the third part of the question, there is suffice it need for labour in the district to keep everyone in full employment. As regards the last part of the question, which refers to another shed altogether, the stoppage of construction referred to was due to the fact that the labour and material which would otherwise have been absorbed were needed for other and more important undertakings.

R.A.F. Uniform.

Col. YATE in the House of Commons on Aug. 7th asked the Under-Secretary of State to the Air Ministry whether a lieutenant in the R.A.F. will have to pay at least £16, at ready-money rates, for one cap and one suit of clothing in the proposed new pale-blue uniform; and whether the introduction of this pale-blue uniform is strongly opposed by all R.A.F. officers in France and elsewhere on the grounds that it is impossible to wear it at work in the aerodromes or on the machines owing to its getting so easily stained with oil?

Maj. Baird: Controlled prices will, it is anticipated, be fixed almost immediately under which the new uniform will be purchasable at a price which will be less by 25 per cent. than the figure quoted by the hon. and gallant member. No foundation is known for the statement in the second part of the question.

Air Ministry Official.

Mr. T. WILSON asked the Under-Secretary of State to the Air Ministry whether a Mr. Haywood is assistant commandant of the Women's R.A.F.; if so, is Mr. Haywood of military age; and whether Mr. Haywood was recently an insurance clerk at Cardiff and obtained exemption from military service on the ground of his then occupation?

Maj. Baird: Mr. Haywood is an established Civil Servant, who has been temporarily lent by his Department to the Air Ministry for urgent administrative work in connection with the Women's R.A.F. He does not hold the position of assistant commandant. Mr. Haywood is 38 years of age and of Grade 2 medical category. He received a certificate of indispensability from his own Department in September, 1916, and his case, in common with that of all civilians of military age in Government Departments, is under review by a Committee of the Ministry of National Service.

W.R.A.F. Officers.

Mr. T. WILSON asked the Under-Secretary of State to the Air Ministry whether several of the senior officers of the Women's R.A.F. have resigned since the present commandant, the deputy-commandant, and the assistant-deputy-commandants were appointed; whether he is aware that at present there is a feeling of dissatisfaction in the force with the present commandant; and whether, in view of this dissatisfaction, he will institute a full enquiry into the causes?

Maj. Baird: Two senior officers of the Women's R.A.F. have resigned since the appointment of the present commandant. The Air Council have every confidence in this lady's ability and discretion, and they see no need for an enquiry of the nature suggested in the last part of the question.

Mr. T. Wilson asked the Under-Secretary of State to the Air Ministry if he will state the previous experience of the present commandant of the Women's R.A.F., and the reasons for her appointment to the position?

Maj. Baird: Miss Douglas Pennant has for more than six years been a member of the National Health Insurance Commission for Wales, and she had previously served as a co-opted member of the London Education Committee. She was appointed to her present position because her experience and qualifications rendered her, in the view of the Air Council, the most suitable person available to carry out the duties attaching to it.

Norman-Thompson Flight Company.

Mr. JOYNSON-HICKS asked the Under-Secretary of State to the Air Ministry whether he is aware that the Norman-Thompson Flight Co., Ltd., of Bognor, were responsible for the design and construction of the first flying boat of present-day type used for the Navy; and that a design by this firm was on April 20th, 1918, officially adopted by the Air Ministry as the Government pattern of naval instruction machine; whether he is aware that during the war this company have supplied to the Government about 100 flying boats as well as land machines; that in 1915 the Admiralty Air Department asked for more production, which involved the company in making extensions, which were ready in May, 1916, but that for 12 months after that the company, owing to the shortage of orders, were only working at one-third of their full output; and that in 1917 the Air Board directed a further enlargement of the company's works; whether the Government provided the money for the new buildings which were specially designed for the production of flying boats, and are now approaching completion; whether he is aware that, without a day's warning, on Jan. 28th of this year, all orders for such flying boats were cancelled, except as regards those then in hand; whether there has been any complaint against the work of this company; whether the Secretary of State has received a petition from the workmen employed by the firm in reference to the indecision of the Air Board regarding future work; and whether he is in a position to make a statement as to the future dealings of the Board with this company?

Mr. Kellaway: I have been asked to reply to this question. I am advised that the shortage of orders in and after May, 1916, was due to difficulties experienced with the engines for one particular type of machine. In other respects the work completed by the company was satisfactory, but this type being no longer required by the Services the contract was cancelled, subject to the completion of any boats laid down. At present the firm has an order for 30 boats of another type. There has been delay in the placing of further orders owing to the appointment of a receiver for the debenture holders and the uncertain financial position, but in view of the prospect of satisfactory financial arrangements being made a further substantial order is in prospect.

Air-Raid Warnings.

Mr. GILBERT on Aug. 8th asked the Home Secretary whether it is proposed to alter in any way the present system of air-raid warnings in London or if it is proposed to continue during the autumn and winter months the present warnings by maroons; whether he will state what arrangements have been

made for the opening of tube stations and other shelters if raids take place late or after midnight; and if he will issue posters on all public buildings giving the present warnings and especially advising the public to stay at home?

Sir G. Cave: It is proposed to continue during the autumn and winter months the present system of air-raid warnings in London, which has proved effective. Arrangements have been made under which all the tube stations, with the exception of a few which are unsuitable, will be available as shelter at whatever time a raid may occur, in addition to the great majority of the buildings classed as public shelters. It is not proposed to issue posters warning the public to stay at home when warning is given of a raid, as this advice has been frequently given, and is, I believe, now well understood and generally followed.

Aircraft Manufacture (Wages).

Mr. T. WILSON asked the Minister of Munitions whether he has received any applications from controlled firms engaged in the manufacture of aircraft to allow them to pay certain of their workpeople an increased wage, such increase to be paid from the funds of the firm concerned; if so, whether the request has been refused; and whether he will state the reason for such refusal?

The Parliamentary Secretary to the Ministry of Munitions (Mr. Kellaway): I have not in mind the particular case referred to by my hon. friend. It is not the practice of the Department to sanction proposals for increases in wages to any class of workpeople already in receipt of the recognised standard district rate, unless exceptional circumstances justifying the increase are shown. It is in the interest of all concerned that uniformity in wages should be maintained so far as possible.

Cellulose Acetate.

Mr. WRIGHT (by private notice) asked the Prime Minister what Department of what Ministry was prior to February, 1917, and has since that date been responsible for advising the War Office or the Ministry of Munitions whether proposals for the production of cellulose acetate should be accepted?

Mr. Bonar Law: I only received notice of this question a few minutes before I entered the House. The subject being under enquiry, I think it would be premature and might be misleading to attempt to furnish information as to the respective responsibility of the various sections of the War Office and Ministry of Munitions concerned.

British Cellulose Company (Enquiry).

Sir W. BULL (by private notice) asked the Leader of the House if he has been able to meet the demand of the British Cellulose Company for a full enquiry on oath into the charges made in this House and in the Press against that company?

Mr. Bonar Law: I have invited one of His Majesty's judges, who will act as chairman, and two business men whose names will, I am sure, inspire confidence, to enquire into this matter, with the following terms of reference:—

"To enquire into and report upon the formation and financial arrangements of the British Cellulose and Chemical Manufacturing Co., Ltd., and associated companies, and upon their relations with Departments of the Government."

I have not yet, owing to their absence from town, received the consent of these gentlemen, and I cannot, therefore, give their names, but if possible I shall give them before the House rises to-day. The power to take evidence on oath could not be given except by legislation which, in any case, would have been impossible before the House rises, and I am confident that the absence of this power will not prevent the fullest enquiry into all the circumstances of the case.

Mr. T. M. Healy: Is the right hon. gentleman aware that there is a Bill down on the Order Paper to-day dealing with certain complaints of inhumanity in Belfast Prison in order that evidence may be taken on oath; why not have one commission to take these enquiries?

Mr. Bonar Law: I do not see how it is possible that the Bill to which my hon. and learned friend refers can be passed. I do not think it is possible.

Mr. Healy: Then why not make the reference to Belfast the same as is being done in this case, so that there shall not be a delay of three months? You are giving to English members in the case of an English scandal an immediate enquiry, and you say that an oath is not necessary. In the case of the Irish scandal you say that it is necessary, and the matter will consequently be delayed for three months.

Mr. Bonar Law: I believe a question is being addressed on that question to my right hon. friend.

R.A.F. Observers.

Mr. OUTHWAITE asked the Under-Secretary of State to the Air Ministry whether his attention has been called to the fact that flying officer observers, many of whom have been active service in the Infantry as well as having served with fighting squadrons in France and some of whom have commanded companies and have gained honours, are treated, on their return to England to obtain pilot certificates, in the same manner as cadets who have recently been called up, and that at one school of military aeronautics they are fallen-in on Sunday mornings and inspected as private soldiers and are also liable to punishment parades; and whether any steps will be taken to remove this cause of resentment?

Col. Gibbs: Courses of instruction for officer observers are administered on the same system as that which prevails for all young Army officers under instruction, and no reason is seen for its alteration.

Jonas, Colver and Company.

Mr. JOYNSON-HICKS asked the Minister of Munitions (1) whether he is aware that the firm of Jonas, Colver and Co., Ltd., had, prior to the war, one of the best reputations in Sheffield as steelmakers, and during the whole of 1915 and the early part of 1916 were practically the sole suppliers of aeroplane cranks and crank steel for air engines, but that their reputation for good steel changed, and that owing to the bad steel supplied by this company the principal machining firm in Sheffield was occupied on machining 80 per cent. of defective stuff to the prejudice of the engine programme of the Air Board; whether any compensation in respect of bad steel paid to machining firms came out of public funds; whether an analysis showed that much of the steel was such that it never could have met the tests required; whether he is aware that in the middle of 1917 the chief steelmaker to Jonas and Colver left and that Mr. Robert Jonas is now in charge of the steelmaking plant; and whether the Air Board has recently installed a Government steel specialist at the works, and what experience of steelmaking has this expert; and (2) why, in spite of the repeated output of defective steel by Messrs. Jonas and Colver, they still have the largest allocation for the production of high-grade steel of any firm in Sheffield; and whether he will cause a full, independent enquiry to be made into the transactions of this firm since the war began?

Mr. Kellaway: I am informed that the firm mentioned had, previous to the war, one of the best reputations as steel makers in Sheffield, and that so far as the Ministry of Munitions is concerned, the reputation of the firm as steel producers has not changed. It is incorrect to state that the firm was practically the only producers of aeroplane cranks and aeroplane crank steel in 1915 and the early part of 1916. Owing to the stringency of the specifications and the greater stresses which have to be endured by this particular steel, all firms engaged in its manufacture have encountered considerable difficulties. These difficulties have now been overcome. The quality of Messrs. Jonas and Colver's

products are quite equal to the average deliveries from other firms. It is possible that over a period of a few days' rejections might have been as high as 80 per cent., but the rejections over a reasonable period have not exceeded those usual in the trade. No compensation from public funds in respect of bad material has been made. The steel was correct to the analysis required at the particular stage of manufacture. The chief steel maker to the firm left in March, 1918, and not in

1917. He was succeeded by an expert from another Sheffield firm. An officer with steelmaking experience has been watching operations on behalf of the Ministry and for purposes of advice. It is true that the allocation of orders for this particular steel to Messrs. Jonas and Colver is the largest in Sheffield, but I may point out that these allocations are made on the advice of a committee composed of representatives of the leading firms of steel makers in Sheffield.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

War Office, Aug. 4th.

"Italian Front.—During the past week the R.A.F. have destroyed 14 enemy aeroplanes and one observation balloon, without loss to themselves."

General Headquarters, Aug. 6th.

"On Aug. 5th our aeroplanes carried out reconnaissances and observation for our artillery. Very few enemy machines were sighted, and there were no combats. In addition to the German aeroplanes destroyed on Aug. 3rd in air-fighting, another was shot down on that day by machine-gun fire from the ground."

General Headquarters, Aug. 7th.

"Four German machines were shot down during the day of Aug. 6th, and one was brought down in flames on the following night. During the 24 hours, 24 tons of bombs were dropped by us on railways, aerodromes, and billets and several direct hits were observed. All our machines returned safely."

General Headquarters, Aug. 8th.

"On Aug. 7th observation was rendered difficult by ground mist. A considerable amount of reconnaissance and photography was, however, carried out. Over 17 tons of bombs were dropped during the day with good effect, and a large number of combats took place. Fifteen hostile machines were brought down and seven driven down out of control. Two of our machines are missing. A ton of bombs was dropped during the night, operations being hampered by bad weather. One of our night-flying machines is missing."

Air Ministry, August 8th.

"On the morning of August 8th our machines carried out a successful attack on the explosive factories at Rombach. Good results were obtained. All our machines returned."

Admiralty, August 9th.

"A large amount of work has been done by Royal Air Force contingents working with the Navy during the period August 1st to 7th. On Monday last as previously reported, our aircraft successfully attacked hostile Zeppelins, one of which was destroyed and another damaged. On another occasion a formation of our large seaplanes in the North Sea sighted a Zeppelin at about 4,000 ft. They climbed to attack, and were apparently not at first seen by the enemy. Later the crew of the Zeppelin evidently sighted our machines, for all bombs were dropped, water ballast released, and the nose of the Zeppelin put up into practically a vertical position. By these tactics the Zeppelin was able to escape into the heavy clouds and was lost to sight. One of our machines was forced to land in Dutch waters. The machine was destroyed and the crew interned. Convoy and anti-submarine patrols have been maintained. Enemy destroyers and submarines have been attacked and direct hits registered. Bad visibility has interfered with bombing operations over Ostend and Zeebrugge, but many tons of explosives have been dropped with good results. During engagements that have taken place three enemy machines have been shot down in flames and six driven down out of control. All our machines have returned safely."

General Headquarters, August 9th.

"On August 8th our aeroplane squadrons cooperated with the other arms on the battle front throughout the day. The line reached by our attacking infantry was reported by our contact aeroplanes. The positions of the hostile artillery in action and columns of German infantry and transport on the march were signalled to our guns by our artillery machines. Other machines supplied our advanced troops with ammunition from the air. Co-operation with Tanks was carried out systematically. Our machines assisted the Tank crews with information, attacked strong points and other opposition with bombs and machine-gun fire, and, by dropping smoke bombs along the line of their advance, assisted to conceal the approach of the Tanks from the enemy. Our contact machines working with the cavalry rendered valuable service. Flying low in front of our advancing line, our fighting squadrons shot at and bombed the enemy in his retreat, causing havoc among masses of hostile troops and transport on roads congested with traffic. Our bombing squadrons, flying a few hundred feet from the ground, attacked trains, railway junctions, and bridges. Forty-eight hostile machines are recorded as destroyed by our aeroplanes, and 17 others were driven down out of control. Five hostile balloons were shot down in flames. Fifty of our own machines are missing, most of these casualties being due to fire on the ground. One of our night-flying machines also failed to return."

"On August 9th our airmen continued the work of co-operation with British infantry, artillery, cavalry, and Tanks on the battle front. German troops and transport were again attacked with bombs and machine-gun fire from a low height whenever a suitable target offered. The Somme bridges were heavily bombed both by day and night. Elsewhere along the British front activity in the air has been slight, but the ordinary work of photography, reconnaissance, and observation has been carried on."

War Office, August 9th.

"Italian Front.—Since my last communiqué the Royal Air Force have destroyed 11 hostile aeroplanes and one observation balloon. One of our machines is missing."

Admiralty, August 10th.

"Reconnaissance carried out yesterday, August 9th, by Royal Air Force contingents working under the Navy observed a German destroyer sunk 8 miles north-west of Zeebrugge. This destroyer was in all probability sunk by a British mine. Enemy mine-sweepers operating yesterday off Zeebrugge were heavily bombed by British aircraft."

General Headquarters, August 10th.

"In air fighting on August 9th we destroyed 39 enemy machines and drove down 22 out of control. Twenty-three of our machines are missing. One of those reported missing on the 8th inst. has since returned safely. Thirty-eight and a half tons of bombs were dropped by us during the day on different targets and 18½ tons in the course of the following night. On August 10th the work of our airmen in the battle area continued without intermission, and many combats with German aeroplanes took place. Our balloons followed up close behind the line and carried out valuable observation throughout the day."

Headquarters R.A.F., Independent Force, August 11th.

"On the morning of the 11th inst. our squadrons attacked the railway station at Karlsruhe and a hostile aerodrome. Clouds hindered observation, but one large bomb was seen to hit the station at Karlsruhe, causing an explosion. Fighting took place during most of the outward and return journeys, as a result of which one of our machines was driven down under control and three hostile machines were driven down out of control."

General Headquarters, August 11th.

"On August 10th there was intense fighting in the air, mainly over the battle area. Forty-one enemy machines were destroyed during the day and 20 were

driven down out of control. Twelve of our aeroplanes are missing. Twenty-three and a half tons of bombs were dropped by our airmen in the course of the day, and 31 tons, principally upon bridges and stations in the Somme Valley, during the following night. The work of reconnaissance and observation for artillery fire was actively carried on along the whole front, while co-operation with the other arms in the battle has been actively continued. The amount of small arms ammunition fired from the air upon retreating enemy troops and transport has broken all recent records. On the night of August 10th-11th two hostile night-bombing machines were brought down by us. The first was a giant German machine with five engines and a heavy load of bombs. Anti-aircraft fire has also shot down two other enemy machines during the last two days."

Headquarters R.A.F., Independent Force, August 12th.

"On the afternoon of the 11th instant, in addition to bombing already reported a few bombs were dropped on the triangle of railways at Metz. On the night of 11th-12th instant, our machines attacked two hostile aerodromes and various ground targets with bombs and machine-gun fire. On the day of the 12th inst. one of our squadrons, despite unfavourable weather conditions, successfully attacked the aeroplane and chemical works at Frankfurt. Bursts were observed well in the centre of the objective, and large numbers of enemy aeroplanes attacked and kept up a running fight for about 30 miles. Two enemy aeroplanes were destroyed. All our machines returned safely. Another of our squadrons attacked the hostile aerodrome at Hagenau with excellent results. This squadron just after crossing the lines met large numbers of enemy aeroplanes and at once decided to give battle. As the result of severe fighting four enemy aeroplanes were destroyed and one other was driven down out of control. Two of our machines are missing. The squadron re-formed after this fight and proceeded to bomb its objective. A direct hit was obtained on a large hut on the aerodrome, and a bomb fell on four enemy machines on the ground and destroyed them."

General Headquarters, August 12th.

"Fifty tons of bombs were dropped by our airmen on August 11th and the following night. The two chief objectives both by day and by night were the Somme crossings and certain railway junctions of military importance. Courtrai station and sidings were heavily bombed by some of our squadrons in broad daylight from a low height without loss to us. Many direct hits were observed. At night Péronne and Cambrai stations were severely attacked with good effect. All our night bombing machines safely returned. Enemy aircraft flying in large formations were active on the battle front. Twenty-nine hostile machines were destroyed in air fighting during the day and 24 more were driven down out of control. Four hostile balloons were shot down in flames. Five of our machines are missing. The observation work of our artillery aeroplanes and balloons was steadily carried on. On the night of August 10th-11th a Gotha machine was brought down by anti-aircraft fire in addition to those already reported."

French.

Paris, August 6th.

"British airmen brought down one enemy aeroplane and bombarded the enemy's depôts in the Struma Valley."

Paris, August 8th.

"During the month of July, 184 enemy aeroplanes were brought down, 30 by anti-aircraft guns; 154 enemy aeroplanes were seen falling out of control in their lines, 15 of them hit by the fire of our anti-aircraft guns. In addition to this total of 338 enemy machines, which have been destroyed or seriously damaged, our aeroplanes have also set fire to 49 hostile captive balloons."

"During the same month our day bombing squadrons dropped 194 tons of bombs, and our night squadrons 356 tons, or more than 550 tons, on the bridges in the Marne Valley, enemy troops which had advanced south of the Aisne, and the railway stations in the region of Laon, Hirsin, and Reims."

Paris, August 10th.

"The French Air Service took part in the battle in intimate touch with the infantry, marking the advance realised by our infantry, and harassing the enemy with bombs and machine-guns. Despite rather unfavourable atmospheric conditions, our squadrons engaged in numerous combats, in the course of which 14 German machines were brought down or fell out of control. Nine captive balloons were set on fire. Our day-bombing formations dropped over 23 tons of bombs on troops and concentrations in the valley of the Avre and in the battle zone, as well as on the stations behind the front. Our night bombing air service also dropped nearly 17 tons of bombs on the stations of Ham, Tergnier, Nesle, Hombleux, and on numerous bivouacs, causing fires and explosions."

"Balkans.—French airmen have bombed enemy encampments in the region of Pogradec, and British airmen the railways in the region of Seres."

Paris, August 12th.

"During the day of August 11th, notwithstanding the enemy aircraft which attempted to oppose the passage of our aerial forces, our bombing squadrons carried out successful expeditions over the enemy's lines. Concentration centres, important junctions, bridges, cross-roads, and railways were copiously drenched with bombs, and columns on the march were machine-gunned. Seventeen tons of bombs were dropped on the important centre of communications of Porquericourt in broad daylight, and numerous convoys were blocked. A total of 57 tons of projectiles were dropped, including 22 tons during the night time in the districts of Ham, Noyon, Guiscard, Tergnier, &c. The same day 15 enemy machines and four captive balloons were brought down, whilst 21 were put out of action by our pilots in conjunction with American crews."

Italian.

Rome Aug. 6th.

"Atmospheric conditions favoured the aerial operations of airships of our and Allied airmen. Six hostile machines and a captive balloon were brought down."

Rome, Aug. 7th.

"In air combats six hostile planes were brought down."

"On the night of Aug. 2nd our naval airmen bombarded the military works and harbour of Durazzo, dropping more than 600 kilogrammes of explosives. This morning they dropped an additional 1,500 kilogrammes with visibly good results. All our airmen returned without mishap to their base."

Rome, August 9th.

"Army and Royal Navy airships bombed military establishments at Pola, in the Venetian Plains, and near Trent. Two hostile machines were brought down in air fighting."

"To-day a patrol of eight aeroplanes, a biplane, and seven monoplanes, commanded by Major d'Annunzio, made a brilliant raid on Vienna. The squadron covered a distance of about 620 miles, 500 miles over enemy territory. Our machines left at 5.30 a.m., and in spite of no small atmospheric difficulties reached Vienna at 9.20. They flew over the city at an altitude of less than 800 yards dropping several thousands of leaflets. The crowds in the streets could be

clearly seen. Our machines, which were not attacked, flew back by way of Wiener Neustadt, Graz, Laibach, and Trieste. The squadron maintained its formation throughout and returned to its aerodrome at 12.40 p.m. One of our machines, however, was obliged to descend near Wiener Neustadt owing to engine trouble."

Rome, August 10th.

"Two enemy aeroplanes were brought down yesterday in combats."
"The Italian and British naval air forces are giving no rest to the enemy naval bases. On the morning of August 7th British machines bombed the hangars at Durazzo, causing a fire which could be seen from a distance of fifty miles. The following night Italian machines dropped 65 kilogrammes of bombs on Durazzo and 1,000 kilogrammes on Cattaro, causing fires. On the night of August 9th, naval machines dropped 500 kilogrammes of explosives on the station and railway lines at Santo Spirito di Livenza, and the same quantity on the fortified port of Pola. A fire was observed to break out in the neighbourhood of a submarine station, which was visible from a distance of 37½ miles."

"Enemy machines which appeared during the day of August 7th over our front in Albania were promptly attacked by naval chasing planes, acting in co-operation with military aeroplanes. A large Austrian seaplane which was forced to come down in the sea in the neighbourhood of Punta Samana (north of Valona) was again effectively attacked at a low height by our seaplanes, which observed over Durazzo thick columns of smoke from the fires caused by the aerial bombardments of the preceding days."

Rome, August 11th.

"During air fighting five enemy aeroplanes were brought down."

Rome, August 12th.

"Airships and aeroplanes during the day yesterday bombed with satisfactory results military objectives in the enemy's lines of communication. Five hostile planes were brought down in combats by our and Allied airmen."

Belgian.

"Belgian.—Air Sub-Lieut. Willy Coppens (who this week already had achieved his 22nd victory by bringing down in flames the German balloon at Zonnebeke) on the morning of August 10th, set on fire the enemy balloons at Lerringhe, Ruyterhoeck, and Gapaard (east of Messines), and thus scored his 23rd, 24th, and 25th victories."

German.

"Lieut. Udet won his 44th aerial victory and Lieut. Bolle his 28th."

Berlin, August 6th.

Berlin, August 8th.

"Baron von Boerigk obtained his 20th aerial victory."

Berlin, August 9th.

"We shot down, over the battlefield, 30 enemy aeroplanes. Lieut. Loewen-

hardt won his 49th, 50th, and 51st; Lieut. Udet his 45th, 46th and 47th; Lieut. Baron von Richthofen his 33rd, 34th and 35th; Lieut. Kroll his 31st and 32nd; 1st Lieut. Billik his 28th; Lieut. Konnecke his 23rd, 24th and 25th; and Lieut. Auffahrt his 20th air victories."

Berlin, August 10th.

"We shot down 32 aeroplanes over the battlefield. Lieut. Loewenhardt obtained his 52nd and 53rd victories; Lieut. Udet his 46th, 47th and 48th; Capt. Berthold his 41st and 42nd; Lieut. Baron von Richthofen his 36th and 37th; Lieut. Billik his 30th and 31st; Lieut. Bolle his 29th; Lieut. Konnecke his 26th, 27th and 28th; and Lieut. Neumann his 20th."

Berlin, August 11th.

"There has been very lively aerial activity over the battlefield. We have shot down 23 more enemy aeroplanes and one captive balloon. Lieut. Proll gained his 23rd, Lieut. Veltjens his 24th and 25th, Lieut. Laumann his 21st, 22nd and 23rd, and Lieut. Auffahrt his 21st aerial victory."

Berlin, August 12th.

"Seventeen enemy aeroplanes and four captive balloons were shot down yesterday. Lieutenant Udet obtained his 49th, 50th, 51st, and 52nd aerial victories, Lieutenant Freiherr von Richthofen his 38th, Lieutenant Veltjens his 26th, 27th, and 28th. In July, 518 enemy aeroplanes were shot down on the German front, 69 by our anti-aircraft guns. Thirty-six captive balloons were also shot down. Two hundred and thirty-nine of the aeroplanes are in our possession. The rest were seen to fall within the enemy's positions. We have lost 129 aeroplanes and 63 captive balloons in battle."

Austrian.

Vienna, August 12th.

"Yesterday on the Italian front there were no infantry engagements of any importance, but the artillery duels and aerial activity were all the more lively at many points. In their flights over Feltre and the Seven Communes Italian squadrons attacked from a low height hospitals which were recognisable at a great distance. Patients and persons who were attending to them were killed."

Bulgarian.

Sofia, August 4th.

"After an aerial combat, the German airman Finzler brought down an enemy aeroplane, which fell in flames behind our positions in the Tcherma Bend."

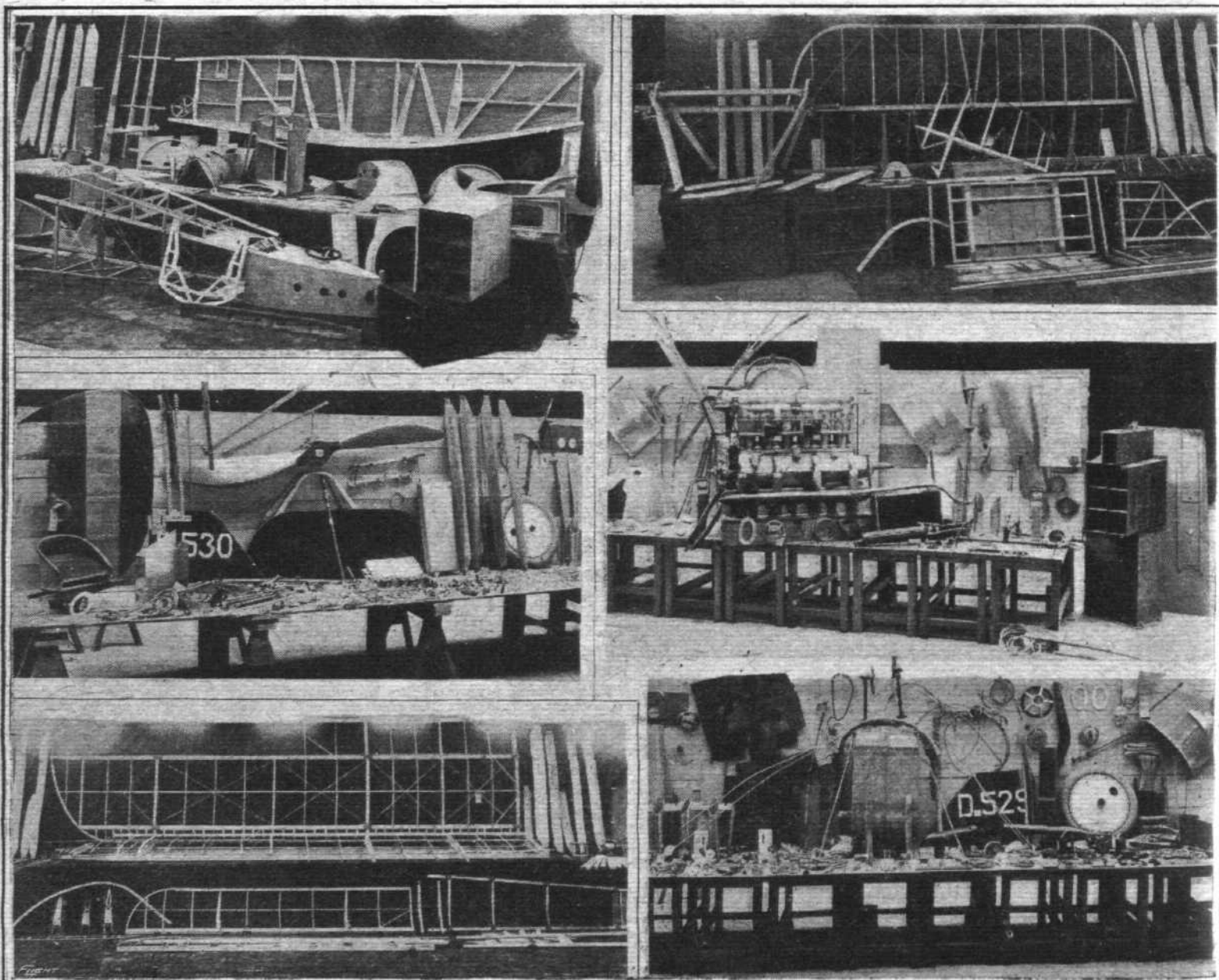
Sofia, August 5th.

"An enemy aeroplane was forced by our fire to land behind our lines south of Lake Doiran."

Turkish.

Constantinople, August 2nd.

"One of our air squadrons dropped bombs on an enemy [Arab] encampment west of Maan, with good results."



An interesting souvenir of a visit by Members of Parliament to a large aeroplane factory near London. These photographs show in all 269 separate parts of the aeroplane.

LEISURE HOURS.

THERE is an ambitious swimming club in connection with one of the R.A.F. repair depots in the neighbourhood of London who are anxious to receive dates for team races. They are also willing, whenever possible, to give assistance at any gala promoted in connection with Military Hospitals. We shall be glad to hand on any communications.

AUGUST 24TH is going to be a very busy day. There will be the Martinsyde sports at Woking, the Handley-Page sports at Cricklewood, the Grahame-White sports at Hendon, and the R.A.F. Hospitals Regatta at Shepperton. In every case a most attractive programme has been arranged, so that whichever way one turns there is certain to be no lack of entertainment.

THE various events in connection with the regatta at Shepperton are attracting a good list of entries, but at the same time it is hoped that before the list closes there will be entries from many of the aircraft works which are not at present represented. There must be few works which cannot turn out one or more teams for the sculling and other events, while those who have sporting inclinations should find plenty of scope among the novel items. Apart from the latter events, there are the Aircraft Challenge Fours, the Double Sculling Race (with cox), the Single Sculling Skiffs, the Double Canoe Race, the Punting Race, and the Dongola Race, all of which are open to aircraft works. Mr. F. Norman, of Docket Point Cottage, Shepperton, will be glad to give any particulars of these events.

THE staff and employees of the aircraft department of Messrs. Thompson Bros. (Bilston), Ltd., on a recent Saturday enjoyed a respite from their labours and indulged in a 16-mile drive to Bridgnorth, in brakes for which special permission was granted. At the dinner Mr. H. J. Thompson, referring to the success of the department, said the number of employees was now more than four times what it was twelve months ago. Mr. Meredith (works manager) expressed his thanks for the backing he had received, enabling him to keep his promise for the large output accomplished, and asked for indulgence for the small difficulties which are bound to arise when much larger things, as the successful termination of the war, are at stake. Mr. Hammersley, in responding for the workpeople, assured the firm of their continued support. In the afternoon a trip was taken up the River Severn, and a tour of the ancient town and ruins.

The Recent Aircraft Workers' Strike.

FOLLOWING the settlement of the recent aircraft strike in the London district, there have been discussions between the parties with a view to a friendly arrangement which should remove all feeling of bitterness and lead to the harmonious working of the factory. As a result both sides submitted the following suggested terms to the Minister of Munitions:—

It is agreed that the terms of settlement *re* the dispute between the Alliance Aeroplane Company and their workpeople shall be as follows:—

1. Rock to be re-engaged.
2. The management to continue to recognise the shop stewards as hitherto, provided the shop stewards are elected by the workpeople in the shops, and on the understanding that the works' rules are conformed to.
3. For the purposes of negotiation the management to recognise a small committee not exceeding seven in number, consisting exclusively of shop stewards and elected by the shop stewards.
4. The ordinary procedure for a workman bringing any question before his foreman shall be allowed. In the event of the workpeople desiring to put any case before the management, it shall be done in the first instance with the foreman or manager of that department, and if no settlement is reached it shall be discussed between the standing committee of shop stewards mentioned above and the management. If these discussions do not result in a settlement, the whole matter at issue shall be referred either to the executives of the unions affected or to the London District Aircraft Committee on the one hand, and on the other to the Engineering Employers' Federation.

The Minister of Munitions, in view of the agreement and having the same object as the parties, concurs in the arrangement. As a natural result, the decision to make the factory a national factory will be cancelled.

Airmen's Hearts.

It appears from a communication read to the French

SIDE WINDS.

INCREASED demand for their specialities has necessitated Messrs. Hoggett, Young and Co. seeking considerably larger premises, and their postal address is now 17, Essex Road, London, N. 1. Their telephone number is North 1752, and the telegraphic address, "Weldoxacet-Nordo," London.

Mr. B. W. WINDER, vice-chairman of Sir Joseph Jonas, Colver and Co., of Sheffield, has been appointed chairman of the company in place of Sir Joseph Jonas, who recently retired. Mr. Winder has been with the company for 44 years, for 35 of which he has been works manager.

ONE of the revelations of the war has been the value of what is termed waste. It is now recognised that there is money in waste, and a considerable amount of attention has been given to the problems of dealing with it, especially that of handling it. This is where Messrs. J. Allan Hanson and Son, Oldham, have been so successful with their series of Croftbank baling presses. These are of various sizes, some operated by hand and others by power, and they enable all classes of waste paper, cotton, rags, leather, etc., to be made up into bales which are easily moved and weighed and occupy the minimum of space. Messrs. J. Allan Hanson and Son will be pleased to send to anyone interested a little leaflet describing these presses.

FROM Mr. S. T. G. Andrews comes a very neat folder giving details of his "Thorough" correspondence courses in elementary aeronautical design and structural aeronautics, the fee for which, in both cases, is two guineas. The former has been specially drawn up for those commencing the study of aeronautics, while the other is a "stress merchants' course"; it does not require previous knowledge of the theory of structures, but shows the calculation of the stresses of the various members from first principles. Those interested should apply to Mr. Andrews at 80, Shakespeare Crescent, London, E. 12.

ALTHOUGH for some time the Aircraft Supplies Co., Ltd., have been indirectly represented in the Manchester district, they have now established a permanent Ascol outpost there at 94 Market Street; the telephone call is Central 37, and the telegraphic address "Upcast, Manchester." Mr. A. Goad has been transferred to this office from Ascol House, and he will work the district in conjunction with Mr. De Grey Firth, the Ascol representative in Leeds, who is spending two days each week in Cottonopolis.

Academy of Medicine, says the *Paris Daily Mail*, that the hearts of airmen undergo a gradual and constant development proportional to the altitude at which they usually fly, and thus they become adapted to the conditions which they are called upon to meet in the higher atmosphere.

An Aeroplane from the A.S.C.

PRINCESS PATRICIA OF CONNAUGHT visited the A.S.C. (M.T.) headquarters at Osterley Park on Saturday last to name an aeroplane subscribed for by the officers and men of the depot through their regimental war savings association. It was stated by Col. T. J. Kearns, C.B., C.M.G., in expressing the thanks of the Corps to Princess Patricia and the Duke of Connaught, that the total amount raised during the past 14 months was £12,982, thus entitling them to the allotment of two aeroplanes in accordance with an arrangement made with the Air Ministry. Our photographs show Princess Patricia naming the first of these aeroplanes "The Osterley No. 1." Before the ceremony a dedicatory prayer was offered by Bishop Taylor Smith, Chaplain-General of the Forces, and afterwards Lieut. A. C. Sanderson, R.A.F., did some exhibition flying with the machine.

The Duke of Connaught said, as Colonel of the regiment, he was pleased to be among them and emphasised the importance of the services rendered to the Army by the A.S.C.

Among those present were Maj.-Gen. Brancker, R.A.F., Lieut.-Gen. C. L. Woolcombe and Maj. H. Spencer Johnson.

Emperor Karl Sees an Aerial Fight.

ACCORDING to a telegram from Vienna to Amsterdam, during the Emperor Karl's visit to the south-western front he arrived in the Sugana Valley just as a number of enemy airmen came up. The anti-aircraft artillery immediately opened a violent fire, and Austrian airmen ascended to attack the enemy planes. The enemy drew off, but returned shortly afterwards and circled above the spot where the Emperor was standing. Severe aerial fights developed, in the course of which one machine was hit and fell.

COMPANY MATTERS.

British Internal Combustion Engines, Ltd.

At the statutory meeting of British Internal Combustion Engines, Ltd., on August 7th, Sir John F. L. Rolleston, M.P. (the chairman) said:—You will observe from the report sent to you that the whole of the capital of the company has been paid up in full, and that the purchases of the various properties which this company was formed to acquire have been completed. This company is primarily a holding company, and was formed for the purposes, mainly, of acquiring a controlling interest in the Aster Engineering Co. (1913), Ltd., and the whole of the assets of the Green Engine Co., Ltd. We now hold 57,000 out of the 74,538 issued shares of the Aster Engineering Co., Ltd., and the whole of the issued shares of the Green Engine Co., Ltd., both of which companies have had a progressively successful career. Those chiefly responsible for the past success of these companies, and who are practical experts, are continuing to take an active part in the management, and are largely interested in our holding company. We have ample cash working capital, and this has been provided for the specific purpose of increasing the output of Green engines.

These two companies, the Aster and Green, are continuing their operations as before, but on a larger scale, owing to the financial assistance this company is able to render and the amalgamation of interests which it has effected. The Green Engine Co. is the proprietor of the British, foreign, and colonial patents under which the Green engine is designed and manufactured. The Aster Engineering Co. has, from the commencement, specialised in the construction of Green engines, and although we have made arrangements which will enable that company to expedite delivery of the orders it has in hand, and undertake further orders, the Green Engine Co. has monopolised the output capacity of two other engineering works of considerable size. In addition, arrangements have been made with a well-known firm of engineers to manufacture a large number of Green engines.

Apart from Green engines, the Aster Engineering Co. makes the well-known "Aster" internal combustion engine for the special requirements of several Government Departments. Your directors intend to make a special point of seeing that it, and its associated companies, shall be in a position after the war to supply internal combustion engines for all purposes, recognising, as they do, the great future before this class of engine. It is not proposed that this company shall always remain a purely holding company, but that it shall ultimately act as agents and contractors for the supply of complete motor-power sets for various purposes.

William Beardmore and Co., Ltd.

At the annual general meeting held in Glasgow on August 9th, Sir William Beardmore, Bt. (chairman and managing director), said "In 1916—perhaps even more so, indeed,—the resources of the company continued during 1917 to be devoted to the direct support of our fighting services and those of our Allies. The Army, the Navy, the Air Service, the Undersea Service have all called for and received supplies to an extent much appreciated by the various departments. I cannot, of course, enter into any details, but I may be allowed to say that our volume of work and the scope of our operations in 1917 have been extended far beyond any previous experience. The large extensions to plant at Mossend have progressed and are now partially in operation, and other large extensions are proceeding. Within the last few weeks important orders have been received necessitating further arrangements to meet the desired supplies, and these are now in progress.

"I would take this opportunity of expressing my warm appreciation of the loyal and whole-hearted efforts of the management and staff, including the foremen of all the various departments and works of the company during the year, and also of all the workers, male and female, who by their faithful and strenuous work have enabled us to respond so successfully to the demands of the fighting forces.

"I have pleasure in moving that the following dividends on the six per cent, cumulative preference shares of the company be confirmed and approved: Interim dividend at the rate of 6 per cent, per annum, free of income tax up to 1s. 2d. in the £, for the half-year to June 30th, 1917. Final dividend at the rate of 6 per cent per annum, free of income tax up to 1s. 2d. in the £, for the half-year to December 31st, 1917.

"I have pleasure in moving that a dividend at the rate of 6 per cent, per annum on the ordinary shares of the company be and is hereby declared."

The proceedings then terminated.

NEW COMPANY REGISTERED.

First Advance Prospectus Filed since March, 1916.

SNELL'S SUPERCORK SYNDICATE, LTD., a concern "intended to be" incorporated under the Companies Acts, has filed a prospectus at Somerset House, this being the first prospectus filed by a proposed new company in advance of incorporation since March, 1916. Of course, if the necessary subscriptions be not forthcoming, the company may never be incorporated. The capital is to be £24,000 in 8,000 8 per cent. cumulative preference and 16,000 ordinary shares of £1 each; 13,000 ordinary shares are to be allotted to the vendors. The proposed directors are:—J. M. C. Cox, E. S. Fergusson, A. R. Molison, T. Packer, and H. J. Snell. Secretary and office (*pro tem.*):—W. J. H. Lowe, F.I.S.A., Ormond House, Trinity Lane, E.C. 4. The company is to take over a process for manufacturing a cork substance from cork cuttings or waste material. Some of the uses suggested are for ribs of aeroplanes, artificial limbs, buffers, buoys, boat fenders, electric insulators, yacht decks, deck seats, book covers, linings for refrigerators and ice stores, fishing floats, soldiers' helmets, backs for hair and other brushes, heels for women's and children's boots, insoles, jewel cases, bungs for barrels, children's toys, casings for boilers, hot air and steam tubes and electric wiring, &c. "It is believed," that the substance could also be used for hulls of ships and seaplanes.

PUBLICATION RECEIVED.

Aeroplanes and Aero Engines. By "Avion." London: C. Arthur Pearson, Ltd. Price 2s. 6d. net.

Aeronautical Patents Published.

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

Applied for in 1917.

The numbers in brackets are those under which the specifications will be printed and abridged, &c.

Published August 8th, 1918.

10,235. N. A. THOMPSON. Launching and landing of aircraft. (117,309.)

11,456. Soc. LORRAINE ETAB. DE DIETRICH ET CIE. Speed-reducing gear for aviation engines. (109,437.)

Published August 15th, 1918.

10,533. J. WELSH. Bomb-dropping apparatus for aircraft. (117,501.)

Applied for in 1918.

The numbers in brackets are those under which the specifications will be printed and abridged, &c.

Published August 8th, 1918.

2,981. W. R. D. SHAW. Tail-planes of aircraft. (117,411.)

Published August 15th, 1918.

160. W. A. McDONNELL. Apparatus for detecting side-slip in aeroplanes. (117,570.)

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If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages lvii, lviii, lix and lx).

FLIGHT

and The Aircraft Engineer.

36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.

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